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HOUSE OF LORDS

SESSION 1987—88
3rd REPORT

SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

PRIORITIES IN MEDICAL RESEARCH

VOLUME I—REPORT

Ordered to be printed 1 March 1988

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THIRD REPORT

1 MARCH 1988

By the Select Committee appointed to consider Science and Technology.

ORDERED TO REPORT

PRIORITIES IN MEDICAL RESEARCH

PREFACE AND ACKNOWLEDGEMENTS

1. The Committee have conducted an enquiry into priorities in medical research, with particular reference to the needs of the National Health Service.

2. The Committee appointed as their specialist advisers Professor Walter Holland, Professor of Clinical Epidemiology and Social Medicine at the United Medical and Dental Schools of Guy's and St Thomas's Hospitals, and Sir John Butterfield, former Regius Professor of Physic at the University of Cambridge. They would like to express warm thanks to them for their invaluable advice and assistance.

3. The Committee would also like to thank all those who gave evidence: they are listed in Appendix 2, and the bulk of the submissions received is printed in the accompanying volumes to this Report.

4. The Committee enjoyed the advantage of visiting the following institutions in the United Kingdom: the University College and Middlesex School of Medicine, and the United Medical and Dental School of Guy's and St. Thomas's Hospitals, both of the University of London; the Royal College of Physicians of Edinburgh; Trent Regional Health Authority Headquarters, Sheffield; and the Imperial Cancer Research Fund Laboratories in Lincoln's Inn Fields.

5. In addition, four members of the Committee visited the United States of America. An account of the conclusions drawn from that visit is published as Appendix 5 to the Report. The Committee would like to thank all their hosts in the United States (who are listed in the account of the visit) especially warmly for the generosity with which they gave of their time and knowledge.

PART I BACKGROUND

CHAPTER 1

SCOPE OF THE ENQUIRY

1.1 The Committee's enquiry starts from the premise that the United Kingdom should maintain the research capability to sustain first-class health services. They cannot believe that anyone would consciously reject this. Historically it has been the aim for well over a century: the Committee trust—in the face of a certain weight of evidence to the contrary—that it remains the aim today.

1.2 Since the ultimate goal of medical research is improved health and quality of life, reasons can always be found to justify its absorbing more resources. But research budgets are not limitless. Within any given level of funding, priorities have to be set and these depend on hard choices.

1.3 The Committee's approach has been to examine how priorities are set. Do present arrangements result in a good spread of high quality research programmes, carried out under favourable conditions, or is too much left to chance? Is there a strong enough research base, in terms of manpower, equipment and opportunities? How good is the system at responding to changing needs? Are resources well used?

1.4 Numerous witnesses called for extra funding in specific areas of research. The Committee accept both the validity of many arguments used and the desirability of reducing human suffering in the areas identified. But this is not enough as a foundation for a coherent research policy. It is impractical to identify ideal levels of funding. The problem is how to choose between rival claims for funds and how to relate research ideas to service needs. The Committee cannot adjudicate between the claimants but in this Report they recommend how such decisions should be taken.

1.5 Medical research has been touched on by several recent reports. Among the most significant of these are the Mathias Report[1], the Croham Report[2], the ABRC's 'Strategy for the Science Base'[3], the report of the Hayhoe Committee[4] and its subsequent Plan For Action[5], the White Paper on Higher Education[6], the White Paper on primary health care[7], the Acheson Report[8], and the ACARD report on medical equipment[9]. All of these have important implications for the Committee's conclusions, since they either deal with a specific aspect of medical research in greater detail than the Committee feel competent to do, or else they have stimulated changes the effects of which are yet unclear, or both.

DEFINITIONS

1.6 In their report on Civil Research and Development[10] the Committee categorised research as follows:

(i) basic (pure or fundamental) research—research undertaken primarily to acquire new knowledge and with no specific applications in mind;

(ii) strategic research—research undertaken with eventual practical applications in mind even though these cannot clearly be specified;

(iii) applied research—research directed primarily towards specific practical aims or objectives.

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[1] Advisory Board for the Research Councils: Report of the working party on the private sector funding of scientific research, May 1986.

[2] Review of the University Grants Committee: Report of a committee under the chairmanship of Lord Croham, GCB, February 1987, Cm 81.

[3] A Strategy for the Science Base: A discussion document prepared for the Secretary of State for Education and Science by the Advisory Board for the Research Councils, May 1987.

[4] Hospital Medical Staffing: Achieving A Balance: A consultative document, issued on behalf of the UK Health Departments, the Joint Consultants Committee and Chairmen of Regional Health Authorities, July 1986.

[5] As above: Plan For Action, October 1987.

[6] 'Meeting the Challenge', April 1987, Cm 114.

[7] Promoting Better Health: the Government's programme for improving primary health care, November 1987, Cm 249.

[8] Public Health in England: The report of the Committee of Inquiry into the future development of the Public Health Function, January 1988, Cm 289.

[9] 'Medical Equipment': Cabinet Office: Advisory Council on Applied Research and Development, 1986.

[10] 1st Report, Session 1986-7, HL 20.

1.7 This set of definitions is not wholly appropriate to medical research, which is organised differently from other forms of civil research and development. Therefore the categories of research which the Committee have adopted in this report are:

(a) basic research;
(b) clinical research;
(c) public health research;
(d) operational research.

The same spectrum stretches from *basic research* in the pursuit of knowledge to applied research to attain specific ends, but the distinction between basic, strategic and applied research is less significant than in other fields. With improved health and quality of life being ultimately the justification for all medical research, this research has a common strategic objective. The spectrum also includes *clinical research*—that is, research involving patients. The distinction between clinical and other types of research is administratively very important. Because clinical research involves patients, it requires facilities for patient care as well as research. Many of those engaged in the research need clinical skills, and the hospital facilities are expensive.

1.8 Medical research is the concern of the biomedical sciences, but not of them alone. There are two other broad categories. *Operational research* is the term used for applied research concerned particularly with the effectiveness of service provision and administration in the NHS. *Public health research* is the term the Committee have in general used to cover all strategic and applied research concerned with the health needs of the community as a whole, including the provision of services to meet those health needs. This is a wide field. The Committee are aware that the usual term for this type of research in the United Kingdom has been ‘‘health services research’’ although this term has also been used to mean what the Committee have defined as ‘‘operational research’’.[1] They have preferred the term ‘‘public health research’’ since it more obviously covers research into health education and health promotion as well as the provision of services. It embraces epidemiological and sociological studies of populations, as a means both of aiding prevention of disease and of establishing health needs. Drawing on a range of disciplines, including epidemiology, the behavioural sciences, statistics and economics, it seeks to establish strategies to promote health and provide optimal health services. It is not however divorced from biomedical research.

1.9 Medical research embraces a wide range of disciplines. It includes nursing and dental research. It increasingly includes the sciences contributing to medicine, as a consequence of the interdisciplinary nature of new developments and the impact of molecular biology on understanding of the human body. It includes non-clinical research in the NHS, and research for the pharmaceutical and medical equipment industries.

ORGANISATION

1.10 The organisation of medical research has several components, described below. In brief, these are:

(i) the Medical Research Council (MRC), and to a lesser extent the other Research Councils;

(ii) the University Grants Committee (UGC), which pays for the medical school and university infrastructure;

(iii) the National Health Service (NHS) which pays for hospitals and patient care and absorbs the distortions imposed on health service provision by research needs;

(iv) the Health Departments which have responsibility for the NHS and also fund some research;

(v) the medical research charities;

(vi) the pharmaceutical and medical equipment industries.

---

[1] Witnesses used the term ‘‘health services research’’ in both senses in evidence. For the avoidance of doubt, the Committee have used the term only where they have quoted from witnesses. In those cases they have sought to ensure that the sense is clear from the context.

Medical research thus is supported by two forms of dual funding. On the one hand there is dual funding by the Research Councils and the UGC, as is typical of basic research generally in the United Kingdom. In addition to this, there is dual funding between the Department of Education and Science (which has responsibility for the Research Councils and the UGC) and the Health Departments (which have responsibility for the NHS).

1.11 The major public institution in the field of medical research is the Medical Research Council. This was originally set up in 1913 as the Medical Research Committee, to administer funds provided for medical research under the terms of the National Insurance Act 1911, and was incorporated under its present title by Royal Charter in 1920. It is funded in the same way as the other Research Councils, by a grant-in-aid through the Department of Education and Science. It also receives funds for specific projects from a number of other Government sources, including the Health Departments, the Overseas Development Administration, the Ministry of Defence, the Department of Employment and the Health and Safety Executive; also from international agencies such as the World Health Organisation and the European Commission; from industry and from the British Technology Group. In 1986–87 (the last year for which full figures are available) the grant-in-aid was £128.3 million, and other income totalled £9.3 million.

1.12 The function of the MRC as described in its handbook is "to promote the balanced development of medical and related biological research in this country." It is now advised by a Neurosciences and Mental Health Board, a Cell Biology and Disorders Board, a Physiological Systems and Disorders Board and a Tropical Medicine Research Board, and by many specialised committees. The Council employs its own research staff and also provides grants for other institutions and individuals who are not members of its own staff, thus complementing the research resources of the universities and hospitals. In addition the Council advises the Government on matters relating to medical research and cooperates with Government departments and with other organisations in this country and overseas.

1.13 The MRC employs research staff direct in its two major research establishments, the National Institute for Medical Research at Mill Hill and the Clinical Research Centre at Northwick Park, and in its research units. There are over 50 such units, the majority of which are situated within or in close proximity to a university or hospital, but which are normally independent of the host institution both in function and in administration. In addition, the MRC appoints to its staff a small number of individual research workers, most of them based in university departments, whose research expenses are normally provided by means of programme or project grants. In 1986–87 these three categories accounted for 56.9 per cent (£76.2 million) of MRC expenditure.

1.14 In addition the MRC funds research by means of a range of external grants. Apart from special grants to support the administrative overheads of two institutions, the Institute of Cancer Research and Strangeways Research Laboratory (both of which also receive considerable funding through research grants), these grants are of two kinds: programme grants, normally made initially for five years and renewable, to support the long-term work of a research department; and project grants, normally made for a period of three years, which are designed to provide support for a single specific piece of work seeking the answer to a single question or a small group of questions. In 1986–87 long-term grants (special and programme grants) accounted for 13.0 per cent (£17.4 million) of MRC spending; project grants accounted for 16.0 per cent (£21.4 million).

1.15 Finally (apart from international subscriptions and headquarters and central expenses) the MRC supports the training of researchers through fellowships or studentships. These accounted for 5.3 per cent (£7.1 million) of MRC expenditure in 1986–87.

1.16 The role of the MRC in supporting research in universities is complemented by that of the University Grants Committee. The UGC supports the basic infrastructure for medical research in universities through the block grant, in the same way that it does for all forms of research under the dual support system. The UGC thus supports medical and dental schools and university departments of nursing, in conjunction with the NHS which supplies the hospital facilities and the patients without which these schools could not work. Biological sciences which contribute to medical research are supported by the UGC in universities outside medical schools.

1.17 The other Research Councils also contribute towards medical research. The Economic and Social Research Council (ESRC) is concerned with supporting research into the economic and social aspects of health and health-care provision. Five of the ESRC's research centres are directly concerned with health matters: the Centre for Health-related Studies in Education and Family Health, Thomas Coram Unit, London; the Centre for Health Economics, University of York (jointly funded with the DHSS); the Centre for Addiction Research, University of Hull; the Research Unit in Health and Behavioural Change, University of Edinburgh (jointly funded with the Scottish Home and Health Department and the Scottish Health Education Group); and the Social and Applied Psychology Unit, University of Sheffield (jointly funded with the MRC). The ESRC also supports a wide range of health-related research through its Research Grants Scheme, together with work which is intended to influence policy and practice in the provision of health services.

1.18 An appreciable amount of work supported by the Science and Engineering Research Council (SERC) in fields such as biophysics, biochemistry, bioengineering, microbiology, genetics, cognitive science, and organic chemistry contributes to the science base of medical research. SERC is responsible for the support of pharmacy through the provision of research grants and research studentships for the support of research in schools of pharmacy. SERC also impinges on medical research through the activities of the Biotechnology Directorate, whose aims are both to foster and coordinate research in biotechnology, and to encourage cooperation between contributing science and engineering disciplines, and also to encourage industrial involvement. SERC has over the past few years awarded £850,000 for collaborative research between academic institutions and pharmaceutical companies and it has a ‘‘specially promoted programme’’ in medical engineering designed to encourage research and industrial cooperation in the development of medical equipment.

1.19 The Natural Environment Research Council (NERC) supports work on pollution in a number of establishments. Much of this work has a bearing on problems of health.

1.20 The Department of Health and Social Security (DHSS) contributes heavily through the NHS to the provision of facilities used by medical research but has only a limited programme of directly-managed research. The DHSS spent £20.6 million on this in 1986–87. The programme covers four main fields:

(i) health and personal social services and social security (£12.4 million);

(ii) NHS building and engineering (£2.1 million);

(iii) NHS equipment and supplies (£4.0 million); and

(iv) NHS information technology (£2.1 million).

In the first category the DHSS supports 36 units and programmes, and over 200 single projects. These units and programmes are either in and administered through Regional Health Authorities (RHAs) or (more usually) in universities. In addition, the DHSS funds a certain amount of research through commercial consultants. Some of this is purely concerned with the administration of services for the NHS; but some comes within the definition of medical research adopted by the Committee.

1.21 The DHSS does not directly fund much clinical or biomedical research. Funds originally allocated to the DHSS for commissioning research under the arrangements made following the Rothschild Report[1] were returned to the MRC in 1981, under an agreement (usually referred to as the ‘‘concordat’’) between the MRC and the DHSS that the former would undertake research required by the latter, who (together with the other Health Departments) would be represented on the Council and its Research Boards. This concordat also led to the establishment of a Health Services Research Panel by the MRC. The Health Departments retain funds for public health and operational research; responsibility for such research is therefore divided between the MRC and the Health Departments, whereas responsibility for basic and clinical research rests almost exclusively with the former. For the last five years an annual ‘‘stocktaking’’ meeting has been held between the Health Departments and the MRC.

1.22 In addition the DHSS, through the NHS, funds the Locally Organised Research Scheme (LORS). Regional Health Authorities (RHAs) and District Health Authorities (DHAs) may make significant *ad hoc* contributions to specific local needs. Otherwise the NHS itself funds little research. The Chief Scientist has a right of nomination of a representative to each of the Regional Research Committees through which LORS is administered, and the DHSS receives a copy of each Regional Research Committee’s report. About £8 million was allocated from RHA funds in 1985–86 to locally organised research.

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[1] A framework for Government Research and Development, November 1971, Cm 4814.

1.23 A number of external bodies funded by the DHSS commission research on their own behalf: the Health Education Authority, the Centre for Applied Microbiology and Research, the National Radiological Protection Board and the National Biological Standards Board. In all these bodies spent something over £12 million on research in 1986–87.

1.24 The DHSS has a nominal system of Research Liaison Groups, each of which covers a particular field of research and includes DHSS policy makers and research management staff, scientific advisers appointed by the Chief Scientist and, in most cases, service advisers (doctors, nurses and social workers) representing the interests of the NHS and local authorities, by whom they are nominated. These Groups are available to advise the DHSS on priorities and research proposals in their area, but they seldom meet.

1.25 The appropriate Departments of the Scottish, Welsh and Northern Ireland Offices have responsibility for the NHS, and for medical research, within their Region. Scotland is significant on a national scale, since there are four major medical schools in Scotland and extensive support for, and coordination of, research by the Chief Scientist in the Scottish Home and Health Department.

1.26 Finally, a great deal of research is supported by the medical research charities and by the pharmaceutical industry. The former are now represented by an Association of Medical Research Charities (AMRC), though one or two charities such as the Wellcome Trust, the Imperial Cancer Research Fund (ICRF) and the Cancer Research Campaign have traditionally exerted, and continue to exert, individual influence because of the scale of their funding. The pharmaceutical industry is represented by the Association of the British Pharmaceutical Industry (ABPI).

1.27 The importance of the charities and the pharmaceutical industry in medical research is underlined by the following figures, which show the main sources of funding in 1985–86:

Medical Research Council	£121.5m
DHSS	£17.8m
Charities	£110.0m
Pharmaceutical Industry	£490.0m[1]

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[1] P 415.

PART II REVIEW OF THE EVIDENCE

CHAPTER 2

How Priorities Are Set

2.1 A strong theme running through the evidence presented to the Committee was that priorities in medical research had largely to be science-led. Thus the MRC said, in their Corporate Plan published in 1986, which they submitted to the Committee as part of their evidence: "At the outset we should make a statement which is self-evident to those engaged in research: scientific research is undertaken by scientists; it is they alone who generate new ideas and identify new lines of investigation. Any organisation sponsoring medical research must be 'science-led'. The outcome of research is unpredictable and the time-scale of discovery can be widely variable. All this suggests that the most important role of the MRC is to identify the able investigator with a good programme and to have at hand the right means to support him".[1] Other witnesses supported this general approach.[2]

2.2 Both Sir Raymond Hoffenberg, President of the Royal College of Physicians (p 265), and Sir David Weatherall, Professor of Clinical Medicine at Oxford (P 1), drew the Committee's attention to the work of Comroe and Dripps. Comroe and Dripps set out to evaluate as rigorously as possible the efficiency of targetted as opposed to basic research as a means of developing more effective treatment and therefore to establish which should have greater weight in American research policy. They started by identifying the body of knowledge required to support the ten most significant advances in cardiovascular and pulmonary diseases since the early 1940s. They then sought to show whether this knowledge had been produced by work which was clinically oriented or work which was not. Their most significant finding was that 41 per cent of the essential work for these clinical advances came from work which was not clinically oriented. Their conclusion was that "a generous portion of the nation's biomedical research dollars should be used to identify and then to provide long-term support for creative scientists whose main goal is to learn how living organisms function, without regard to the immediate relation of their research to specific human diseases, and that basic research pays off in terms of key discoveries almost twice as handsomely as other types of research and development".[3]

2.3 There are limits to the extent to which it is sensible to set priorities in terms of the incidence of disease. "The Committee should realise that medical research, like politics, is very much the art of the possible... it must be realised that there is only a limited scope for 'pushing' science in a particular direction" (P 1). The City and East London Confederation of the University of London said that "the problem about political procedures is that it is no good ... directing research funds to solve problems where there is a basic lack of good ideas and appropriate technology and, sometimes, competent research workers"; therefore they argued against a return to the Rothschild principle of a customer/contractor relationship in medical research (pp 334–5).

2.4 The Wellcome Trust stated the practical implications of this point succinctly. "The Trust allocates a considerable proportion of its income to basic biomedical sciences since it considers that strength in this aspect will be the foundation of improvement in clinical care" (P 38). The Hunterian Institute said much the same thing: "past indications encourage the belief that basic research is a frequent and invaluable source of developments that benefit patients" (P 203). The Royal College of Physicians pointed out a danger of failing to support basic research. "It is important to encourage and facilitate 'non-directed' fundamental research. All applied research depends on knowledge that has accrued from basic research, usually carried out without any objective in view. If we do not continue to support such basic research, our opportunities for carrying out applied or directed research will dwindle" (p 264).

2.5 There was however a distinction made between allowing all priorities to be science-led, and recognising simply that science limits as well as creates possibilities. Many witnesses wished to combine a strong tradition of basic research into the mechanisms of the body with a targetted approach. But many of these same witnesses could not identify any recognisable mechanism for setting priorities or targets.[1]

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[1] Medical Research Council, Corporate Plan, 1986, p 1.

[2] For example P 75, pp 61, 114, 174, 350, 389.

[3] Julius H. Comroe and Robert D. Dripps, "Scientific Basis for the Support of Biomedical Science", *Science*, vol 192, 9 April 1976, p 111.

2.6 Sir Patrick Forrest, former Chief Scientist of the Scottish Home and Health Department, believed that, in certain conditions, directed research was just as good as that produced on investigator-initiated topics. Nevertheless, "I do not think you ever can guarantee directed or contracted research is going to be good research. There will not necessarily be the people there at the time with the ideas in the area that you want to explore. At the moment the MRC are showing how this can be done with a directive for research, on an AIDS vaccine. That seems to be working very effectively" (Q 481).

2.7 Many witnesses (for instance Sir David Weatherall (P 2), the UGC (P 391) and the MRC itself (QQ 1951–2)) made the point that the MRC's programme of directed research on AIDS had been made possible by the basic science work done in immunology, biology and infectious diseases. Dr P.O. Williams, Director of the Wellcome Trust, stressed how conscious was this support for basic sciences: "If I may illustrate by one or two examples, taking one matter which is very apposite at the moment, about eight years ago we decided that infectious diseases was a subject in which there was a shortage of clinical research workers, so we decided to train people in that field. That turned out to be a rather farsighted move, because these people were available when the AIDS problem developed" (Q 188).

2.8 This point, which was made by other witnesses, had implications for targetted research in general: targetted research could only work in disciplines where there were researchers with new ideas, or else it had to be pursued by the long-term strategy of training researchers in the field in question. This was of particular importance in new disciplines, such as nursing research. The slow development of such areas meant that they could not compete equally with other disciplines for funding. "One does need experience and know-how ... to write research proposals to get money from the MRC" (Q 1802), said Professor Crow, of the Nursing Practice Research Unit at the University of Surrey, though she supported the peer-review system for nursing research (Q 1803). Dental research too was "a cinderella subject", for similar reasons: Professor Duckworth, Dean of the London Hospital Medical College, identified how the peer review system in some sense worked against dental research (Q 1822). Professor Miller, Chairman of the Heads of Academic Departments Group (Social and Community Medicine) described how research in community medicine and general practice suffered the same difficulty (Q 1377).

2.9 Professor Bouchier, Professor of Medicine, Edinburgh Medical School, compared the position in nursing and physiotherapy. Nursing research was now established. "It has taken a while for the nurses to realise that you could look critically at a function and see whether they need it. I think it is even more difficult for a physiotherapist to ask the question 'Do you really need a physiotherapist to improve your post-operative or post-stroke management'. You are putting them out of a job ... So I think it has been very difficult to get them to accept the fact that you should do operational research on them. Plus it is very difficult to design a proper project" (Q 507).

2.10 The Faculty of Medicine at the University of Glasgow made the point that the "method of setting priorities differs among the three aspects of medical research. In clinical science outstanding problems of causation in human disease are identified and then tackled in the basic science laboratory ... These priorities almost set themselves ... In health service research priorities are largely determined by the need to collect epidemiological data on major public health problems in a search for appropriate preventive research. Priority tends to be given to those problems whose solution would reduce the pressure on the acute medical services and would be likely to reduce costs to the national health in the most general sense" (PP 77–8).

2.11 The work of the MRC/ESRC Social and Applied Psychology Unit in Sheffield, which was described by Dr. Wall, its Assistant Director, as "very much applied" (Q 782), provided a practical example of how to balance basic, science-led research, and user-led research. The Unit was investigating means of using computers in the NHS, particularly for the general practitioner. The Unit "would like to see the needs and objectives of the general practitioner achieved first and then ask the question about how the computer can support that, rather than the information technology leading the way and then asking what are you going to do with it?'' (Q 835).

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[1] For example P 73, pp 86, 161, 179, 229, 255, 317, 331, 355, 388.

2.12 For the MRC, Dr. Rees presented an approach to priorities in terms of ''an application timescale of research. There is research which seems to be important but you do not see how it is, and then there is the sharp end which is very problem-orientated and problem-led, but there is an important area in the middle where science is making break-throughs which ... you can very easily see where the application is going to be made, so in the development and application of various imaging technologies, for example, for the diagnosis of disease ... it is clear what it will be useful for in the analysis of the human genome, to get to the basis of genetically-inherited diseases or inherited pre-dispositions to various diseases'' (Q 1888).

2.13 Dr. Robert Maxwell, Secretary of the King Edward's Hospital Fund for London (the King's Fund), gave a different analysis of how priorities are set, based on the institutional arrangements and resources available. ''As I see it, there are three main influences on the way that medical research priorities are set. The first is priority setting within the major research budgets. For example the MRC, the DHSS, the pharmaceutical companies and the main medical research charities all have more or less systematic ways in which they select what each thinks is important. I am sure this is done with conscientiousness and thoroughness. The second influence is priority setting among the major institutions, according to the relative size of their budgets. On the whole, this is not done in any systematic way, nor perhaps could it be, except in so far as the ultimate source is governmental funding or there is mutual agreement among several autonomous institutions. A third influence is the interests and skills of researchers. It takes a long time to develop good research in a relatively new field, because there simply is no reservoir of people or good proposals on which to draw'' (P 147).

2.14 For the pharmaceutical industry, the ABPI laid stress on the effect of market forces on priorities in research in the pharmaceutical industry. ''In areas where there is clearly great market demand for new therapies because of the numbers of people in need of better treatment and/or the severity and costs imposed by their distress innovations are more likely to earn a satisfactory income than in those where need is low'' (P 18). ABPI research was more applied than basic: ''the industry is ... to a degree dependent on the excellence of this country's non-commercial fundamental and clinical research. Activity in these cases may not so appropriately be directly driven by market forces, not least because of the remoteness and uncertainty of its endpoint goals'' (P 19). Market signals might also be inadequate for determining levels of support for research into tropical and related conditions. The ABPI advocated what they described as supra-market funding: that was research projects which were publicly funded, contracts perhaps being put out to competitive tender, either nationally as part of aid programmes, or internationally (P 19, QQ 163–71).

2.15 In the medical equipment industry, on the other hand, market signals in the United Kingdom were confused. Mr. Peter Styles of the British Health-Care Trade and Industry Confederation described this: ''in the high-tech area where the export market greatly exceeds the NHS market, the setting of priorities is in most instances product led rather than market led... Indeed, in many instances, if a product was geared to satisfy the needs of the NHS rather than the wants of users, the export sales potential might be very poor. The absence of any policy for the replacement of equipment is also a serious handicap to any product development planning'' (P 168). The clear implication was that research funding and priorities in this industry were only tenuously linked to NHS needs.

2.16 The influence of the NHS on priorities was weak. The Minister for Health, Mr. Newton, stated bluntly that there was no close relationship between the degree of priority given to medical research, or different branches of medical research, and NHS needs (Q 2099). Sir Patrick Forrest thought that ''in general the NHS is rather pathetic in its encouragement of research ... It is not funding of research I am thinking of; it is attitudes'' (QQ 358–9). Professor Healy ''stressed that the NHS, which should be in some respects the principal customer [for research], is distinct from the DHSS and sponsors very little in the way of research. With the changes in management structure in the NHS, it is very desirable to get more scientific input at national level'' (p 131).[1]

2.17 In so far as the Government had a system for deciding priorities, Mr. Newton said, they were happy to rely on a pluralistic policy of priority-setting by different interests. He briefly rehearsed the mechanisms by which the DHSS made its needs known to the MRC and other bodies (Q 2086). The Parliamentary Under-Secretary of State, Mrs Currie, pointed out that Ministers are briefed by departmental research advisers in certain areas (Q 2091) and this in turn allows Ministers to develop their own attitudes to research needs. Mrs Currie saw the process as having three stages: the gathering of information (through medical audit); the identification of gaps; the allocation of resources (if available) (Q 2096). This underlined the fact that the purpose of the Department's research was "ultimately to influence policy" (Q 2091).

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[1] See also PP 158, 168, pp 17, 59–61, 78–9, 217, 222, 333, 375.

2.18 Some witnesses felt that the medical research budget should be more closely linked to the scale of spending on health services in a particular area or discipline; or to the scale of spending on other types of research. The MRC described the procedure by which their allocation was determined. There was no linkage to NHS needs or resources (QQ 1893–1905). Professor Alan Williams of the Centre for Health Economics at York however rejected any simple application of a linkage with the NHS—such as spending 1% of the NHS budget—in favour of one based on "the fastest rate of growth ... that we could handle for the human resources that are available actually to do the work" (Q 1518). This approach was in some sense echoed by Mrs Currie in relation to nursing research. "To a certain extent how far we go in this depends a little bit on the results, the quality of results, and how quickly we are able to put them into practice" (Q 2165). Whether there was a need for a larger scale of funding for nursing research depended on "what is 'need' and what is 'large'. How does one know? ... What I am after has to be the quality of the work" (QQ 2166, 2170). Dr. Robinson of the Nursing Policy Studies Centre of the University of Warwick pointed out that funding for nursing research "is always in terms of tenths if not hundredths of what is spent in medical research" (Q 1792).

2.19 As an attempt to formulate a principle on which priorities might be set, the Department of Health and Social Services for Northern Ireland suggested "a cost-benefit analysis basis with research into problems affecting smaller numbers of the population receiving a lower priority: in essence the greatest good for the greater number" (p 91). Professor Wilcock, Chairman of the Medical and Scientific Advisory Panel of the Alzheimer's Disease Society, suggested that "those diseases that are commonest, cause a significant degree of debility and have a major financial impact, should be given higher priority than others" (p 388). While such a basic principle of matching research spending to the incidence of disease (within the limits of scientific feasibility) was a possibility widely recognised, fewer witnesses acknowledged the difficulties inherent in trying to achieve it. Dr. Stuart Dombey, Medical Director of E.R. Squibb and Sons Limited, however drew the Committee's attention to the confusion inherent in "an analysis of the frequency of different diseases based on the fact that people are now living longer. If we all died at say 35 years then most of the major problems of cardiovascular and cancer mortality would be eliminated and, therefore, it is important to look at problems which are age-related. The important priorities, presumably, are to address mortality and morbidity at an age of 30–50 which would probably have a totally different incidence from the mortality and morbidity at an age range of 50–70. It is, therefore, difficult to get the balance right without looking at integrated epidemiological data" (p 310). This argument therefore implied that a need-led biomedical research policy would require a substantial and sophisticated public health research component to establish the necessary priorities.

2.20 Insofar as medical research was itself analysed in order to decide priorities, this was done inadequately. Professor Alan Williams criticised the extent to which death "tends to dominate clinical research as a means of outcome ... There is more to life than survival. As the rather dramatic improvements in health which enhance people's life expectancy very considerably have been mopped up and implemented, we are now up against the much tougher problem that we cannot really expect these historically spectacular improvements in life expectancy over the last 100 years to go on ... so now we are much more concerned about evaluating the efficacy of different health-promoting and therapeutic research upon people's quality of life. If you looked at any clinical trial or any medical research you would be hard put to find many that even measure that, let alone do so in any systematic way. It is a real indictment of the medical research that has gone on in the last 50 years that it has paid so little regard to that" (Q 1534). Professor Teeling-Smith of the Office of Health Economics gave a simple example of how research could demonstrate what medical practices were not useful. "We did a series of nine studies... indicating that the evidence in favour of multiphasic screening was very limited indeed... the setting up of the BUPA type screening programmes would be totally uneconomic" (Q 1357). Professor Alan Williams, Professor Teeling-Smith and Professor B.T. Williams, of the Department of Community Medicine at Sheffield University, all cited the evaluation of coronary by-pass operations, both as to the efficacy of the operation itself and the efficiency of units (QQ 543–53, 1345, 1555–58) as an example of what such research might reveal. Trent

RHA had used commercial consultants to evaluate the latter as part of their planning to meet Government policy targets for NHS capacity to perform the operation. The Committee received no evidence as to the extent to which that policy was in fact founded on the former type of research—evaluation of the efficacy of the operation. The Committee were told by the Heads of Academic Departments Group (Social and Community Medicine) (though not in relation to coronary by-pass specifically) that "the implications of research work, even when the results are adequately publicised, are frequently either not understood or not accepted, and are not incorporated into routine medical practice or health care planning. Even worse, there have been occasions when the research-funding section of a body, such as the DHSS or a Health Authority, has received the report of a project it has commissioned and funded, and yet the policy-makers within the same organisation have apparently ignored or have been unaware of the results when deciding how to deal with the problem addressed by the research project. This seems to us to be inexcusable" (P 251).

2.21 Some witnesses recommended the establishment of a central institution designed to identify and advise on research priorities. The Association of Medical Research Charities recommended "the establishment of a national forum in which all major parties concerned in biomedical research would be represented" (P 336, see also QQ 1721-1734). This was echoed by the Ciba Foundation (p 73). Professor Campbell, Dean of the Faculty of Medicine at Glasgow University, wanted some sort of "coordinating body" embracing the MRC, the Wellcome Trust and the other charities, the SHHD, the DHSS and the universities (Q 417). The Royal College of Physicians of Edinburgh recommended "the establishment of a permanent 'think-tank' to advise government on priorities of medical research in relation to health needs" (P 52). In addition, while Dr. Robert Maxwell did not "believe in stronger bureaucratic direction of research" (P 147), he recommended "a new health services research council", among whose immediate tasks would be "work on assessing the effectiveness of medical technologies" (P 149). Such an institution was also recommended by Professor Alan Williams. He saw "a distinctive role for a Health Research Council, whose task would be to start from the population's health problems, and work back from these to the research that is needed to help resolve them" (P 287). Professor Williams envisaged this research council operating over a wide range: "there are a lot more factors affecting health than the Health Service" (Q 1513).

Present Balance of Priorities

2.22 The evidence about the present balance of priorities in the United Kingdom was obviously influenced by the particular concerns of specific witnesses. No witness was entirely content with the priority being given to their own particular area. Nevertheless, four areas were identified which were of general concern: molecular biology, clinical research, public health research and operational research.

Molecular biology

2.23 A number of witnesses were worried that the opportunities offered by the new techniques of molecular biology were not being seized.[1] As Sir David Weatherall put it, "what has happened in the last year or two is that, with new techniques, with cell and molecular biology, one can see a glimmering of a way" into the causation of disease. Up to now, "except for the epidemiologists who told us of some risk factors in the community which might go towards those illnesses, we learned nothing about what actually caused them ... The epidemiologist's story cannot be the whole story" (Q 39).

2.24 Sir David summarised the possible benefits of these techniques. "The main advantages for the Health Services of the application of molecular and cell biology to the study of human disease is the likelihood that in the long term these new methods will tell us something about the basic cause of some of the major diseases of western societies, such as heart disease, major psychiatric disease, and the degenerative disorders such as arthritis. Hopefully, this will enable us to treat these conditions more logically and to move away from the current expansion of high technology patch-up procedures that are being used increasingly to manage these intractable problems" (P 3). The Imperial Cancer Research Fund reinforced the point that this sort of basic research was actually strategic. These advances meant that, "with increased resources, it is now easier to do valuable and useful work, especially with a strategic aim, and that it is now possible to design a strategic research programme which could not even have been imagined ten years ago" (P 312). As an example, Dr. Robin Holliday, Head of the Division of Genetics at the National Institute for Medical Research, advocated research into the "common underlying causes due to degenerative changes at the molecular and cellular level'' since ''a better understanding of the ageing process *per se* will have very far reaching consequences for health care''; and would be much more efficient than continuing to treat these conditions as a bundle of separate disorders (p 134).

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[1] For example pp 25, 27, 262, 277, 335, 361.

2.25 Sir Colin Dollery, Professor of Medicine at the Royal Postgraduate Medical School, identified the weaknesses in the support for molecular biology. ''I do not think the central problem is the well-found laboratory ... New biology—molecular biology and what flows from the degree of professionalism in science that is required to make serious progress—has become much more demanding'' (Q 2026). ''What is needed ... is to strengthen the science base of clinical academic medicine ... as well as the clinical base, and the strengthening of the science base, particularly with the burgeoning of the new biology, can only be done in strong universities with strong biological and indeed other sciences'' (Q 2041). The British Postgraduate Medical Federation made the same point (pp 328–9).

Clinical research

2.26 Sir Colin Dollery also identified clinical research as an area which was given inadequate priority, and his concern was echoed by others.[1] Clinical research was of primary importance in effecting the transfer of the fruits of basic research into practice, ''because many of the developments in medicine that are fed into the National Health Service arise in clinical academic departments'' (Q 2020).[2] Professor Pembrey, of the Institute of Child Health of the University of London, who was concerned with translating research in human gene mapping and recombinant DNA technology into services, expressed concern at ''the difficulties that are arising in bridging the gap between research programmes and an established NHS service''. He believed these represented ''a valuable lesson on where management could be more effective'' (p 225).

2.27 Some witnesses remarked that the MRC was less interested in clinical research than in basic research. For instance, Professor Bell, the President of the Surgical Research Society, believed that ''the MRC regrettably do not ... support clinical research very effectively, that is, research that ... is looking at what you do to patients and whether certain treatments are better than other treatments. They have become more interested in basic science research'' (Q 1152). ''I do not think the MRC is necessarily best placed to actually judge [clinical research] because many of the people on the MRC are very eminent people but are basic scientists'' (Q 1156). Professor Jennett of the Department of Neurosurgery at the University of Glasgow believed that ''the narrowness of [the MRC's] view of clinical research should be recognised'' (p 155). Professor Curzon of Leeds University was one of several dental witnesses who said that nobody set priorities for dental research and implied that the MRC was not able to give sufficient attention to this (p 86).

2.28 On the other hand, the MRC had a considerable commitment to clinical research through the Clinical Research Centre at Northwick Park, as well as through programmes and projects. The Association of Clinical Professors of Medicine identified cuts in UGC resources as the cause of weakness in clinical departments; and this was a vicious circle: ''The relative weakness of University clinical departments inevitably is reflected in a corresponding weakness in applications for project grant support to such bodies as the MRC. The poor success of many clinical departments has led some heads to conclude that the MRC is biased in favour of basic rather than clinical research... The response from the MRC that lack of success reflects lack of scientific quality also contains some substance'' (P 267).

2.29 For their part the MRC acknowledged problems in clinical research. There was no progressive reduction in clinical research: ''generally speaking the fraction of our budget which we spend on clinical research is narrowly defined which means that work with patients has been constant over the last six or seven years and the main reason why we have not been able to do more is that we could not have increased it even if we had wanted to do, which we might'' (Q 1973).

2.30 Dr. Rees rejected the idea that the Clinical Research Board should be revived. ''I think that would be taking events in totally the opposite direction... What is required is for clinical research to be better informed of recent scientific advances in other areas, more stimulating, more effective ... hiving it off, tucking it away where it will not receive information would be bad'' (Q 1960). This was partly a function of the blurring of the dividing line between clinical and basic research (Q 1961).

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[1] For example pp 27, 80, 153–5, 158, 250-1, 278, 319, 368.

[2] See also p 327.

2.31 The apparent disadvantage of clinical research was traced by a number of witnesses to limitations in public support for clinical research in teaching hospitals. The Imperial Cancer Research Fund carried out their clinical research in hospitals, though much of their basic science was pursued in their institute in Lincoln's Inn Fields (Q 1660). Professor Malpas, Deputy Director of Research (Clinical) of the ICRF, described the close links between the latter laboratories and the clinical units: ''the unit ... at Barts ... has been grafted on to a teaching hospital, so we have all the present difficulties and constraints with regard to beds and facilities and we of course do make a big demand on such facilities in haematology and radiology'' (Q 1661). The ICRF now supported a special ward at Barts with specially trained nurses and other support, for treating children. ''We feel ... when we have treated over 1,000 children and have had a very fruitful research programme, that this investment has been well worthwhile ... It is an example of how far the charities have to go to in fact support research ... Finally, I would like to give you an example of how severely the lack of university funding could have affected the department at Barts. Currently in my department I have 12 whole time doctors and one half time and four secretaries ... If we had to rely on university funding alone I think it would be fair to say I and one secretary would be left in this department'' (Q 1662). If this trend went on it could further weaken clinical research: for instance, charities could either run their own institutions, or might commission clinical research abroad (QQ 1741–6). Professor J.R. Perrin and Mr. R.G. Bevan of the University of Exeter submitted a useful analysis of how NHS funds for the support of services for clinical research in hospitals were allocated, and how these might be made more efficient (pp 226–9).

Public health and operational research

2.32 A major area of concern for many witnesses was in public health research and evaluation of practice.[1] Dr. Robert Maxwell made this point strongly. ''There may be imbalances within biomedical research, but the particular problem that I would call to your attention is the weakness of health services research relative to biomedical research. This is of long standing in the United Kingdom, and probably in many other countries... There is simply no critical mass of skills, people and funding in health services research and evaluation. Indeed there is a vicious circle in which the main research funding bodies are likely to argue that the problem is not one of funds, but lack of good proposals and good researchers, and to some extent this is true'' (P 148). Professor Alan Williams made the same point: ''Far too much money is being spent at the moment on scientific and technical aspects of new developments, and far too little evaluating their cost-effectiveness'' (Q 1520). It was not only public health researchers who made this point, however. Sir David Weatherall believed there ''certainly should be'' assessment of new clinical treatment. ''One would like to know, for example, the value of a great deal of modern cardiological practices. By and large the trials in new technology get there. What is much more difficult is when one talks about efficiency; what is efficiency?'' (Q 74).

2.33 The North West Thames RHA described the evaluation of different methods of care as under-researched, for instance in mental health, services for elderly people, physical and mental handicap and primary health care (p 223) and the same criticism in respect of effective delivery of primary health care was made by the ESRC (p 103). Professor Maynard of the Centre for Health Economics at York advocated the development of outcome measures for treatment. ''The Department of Health has spent a lot of money producing performance indicators which are measures of activity and not measures of outcome. The debate about health care in this country is obsessed about either spending money (with one side saying we are spending too much and the other saying too little) or it is obsessed about doing things to patients, but it is not really looking at the results of activities and this expenditure, and that is what we have got to be looking at: the cost and the outcome'' (Q 1567). Professor Scott, Regional Medical Officer in Trent RHA, believed this was ''the most obvious gap'' in national research (Q 594).

2.34 The College of Health challenged the performance indicators now being used to measure the quality of patient care and outcome. These were said to be too restrictive, measuring inputs such as beds available and staffing levels, and lumping together deaths and discharges in measuring the outcome of patients who leave hospital. According to the College, the indicators ought to address such questions as these: did patients get better who ought to have done so; did patients suffer avoidable infections, pressure sores and complications? (p 79).

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[1] For example PP 76, 78, pp 11, 126, 131, 154, 179, 216, 223–4, 248, 287–90, 306, 367, 369.

2.35 The Institute of Medical Laboratory Sciences felt that, on the whole, "the present balance between different branches of medical research is not right. Research into subjects lacking public appeal is likely to be underfinanced; however, research requiring the use of the latest technology attracts a disproportionate amount of financial resources" (p 148). The British Institute of Radiology echoed the latter point: "we would have the impression that clinically directed expenditure (in diagnostic and therapeutic areas) is more cost effective than that concerned with radiation safety ... money spent on big science may carry a prestige element and be relatively non cost effective." (p 49). Another imbalance, identified by Upjohn Ltd, was "that acute medicines receive too much attention while chronic diseases, particularly of old age, seem to be largely neglected" (p 375), and the Council of Science and Technology Institutes considered that "far too little attention is paid to preventive medicine compared with acute medicine" (p 84).

2.36 A significant number of witnesses felt that an area of research which should be expanded was that of primary health care: for example Trent RHA (P 101); the British College of Opthalmic Opticians (p 42); Sir Walter Bodmer, Director of Research of the ICRF (Q 1662); and the Royal College of General Practitioners (p 255). Professor Walker, Chairman of the Association of University Teachers of General Practice, stressed the multi-disciplinary nature of such research: it required teams with "a sufficient core of academic general practitioners who could relate to their colleagues in service practices and encourage, support, educate, exhort, enthuse—a facility which at the moment we seriously lack" (Q 1382). The MRC had been involved in this area for a long time; they would still "like to find opportunities of being involved in research involving primary care with practitioners" (Q 1983).

2.37 Professor Kennedy, the President of the Royal College of Physicians and Surgeons of Glasgow, commented that the training programme for general practitioners did not include research; "it is not written in in the way it is for hospital and academic staff. That is the first point. Secondly, I would doubt what people could do in general practice in the way of research. There are some glorious examples where things can be done. The person who picked up thalidomide deformity was a general practitioner in Australia. Pickles working in Yorkshire did enormously important work on the transmission of infectious diseases, but the hard core remaining problems of what causes cancer, heart disease, people's brains to fail as they get older—I do not think the answers to these are going to come out of general practice" (Q 259).

Specific conditions or disorders

2.38 Many witnesses identified specific conditions or disorders, or otherwise defined areas of research, to which higher priority should be given, or which they considered to be underfunded. The following list, which is by no means exhaustive, indicates the range of evidence of this sort:

Ageing	P 5, pp 25–7, 112–3, 133–4, 142, 243–4, 277, 352, 382, 388
Alzheimer's Disease	pp 112–3, 142, 375, 388
Anaesthesia	pp 13, 39, 109
Asthma	P 158, pp 52–3, 329, 368
Back pain	PP 2, 52, p 25
Blindness	p 267
Bronchitis, emphysema and other lung diseases	pp 52–3, 60, 67–8, 327
Cancer	P 52
Cardiovascular disease	P 52, pp 15, 48, 382
Children's diseases	pp 16, 327, 339–40
Clinical pharmacokinetics	p 354
Cochlear implants	p 115
Complementary medicine	pp 132, 248
Congenital mental disorders	p 142
Deafness	pp 116, 142
Dental caries and periodontal disease	pp 6–8, 58, 86, 106–7, 183–5
Diabetes	pp 47, 335, 368
Epidemiology	pp 84, 305
Gland disorders	P 268

Health promotion and preventive medicine	pp 131, 375
Kidney disease	P 268
Mental handicap	pp 180–1, 329
Midwifery	pp 129–30, 257, 348
Mucosal disease	p 45
Neonatal disorders and perinatal morbidity	pp 15, 114, 249–52
Nursing	P 349, pp 9, 30, 129–30, 132–3, 315–6, 345–6, 375
Nutrition	p 84
Optometry	p 42
Oral cancer	pp 45, 372
Osteoporosis	p 244
Parkinson's Disease	p 388
Pathology	pp 84, 305
Pharmacy	p 229
Psychiatry	pp 234, 282
Rheumatism	P 268, pp 9–10, 243–4
Schizophrenia	p 131
Sexually-transmitted diseases	p 131
Skin cancer, skin diseases	P 268, p 252
Spastics	pp 308–9
Stroke	pp 67–8
Tropical medicine	pp 268–9

2.39 Many witnesses however recognised what Professor Davis, Professor of Paediatrics at Cambridge, said of the difficulty of perceiving whether the balance of priorities was right. "No-one can answer this question sensibly; science being the art of the possible rather than the desirable and each of us having his own justifiable priorities ... You would not expect me as a paediatrician for instance to give high priority to questions that exercise my geriatric colleagues" (p 88).

How Priorities Adapt

2.40 In line with the emphasis on investigator-initiated research, almost all witnesses said that priorities adapted to new needs through the response of clinicians, and particularly clinical researchers, to new problems, new perceptions of existing problems, or new methods. Professor Davis put this clearly. "Priorities inevitably adapt themselves to the changing incidence of disease, since those engaged in clinical research, at any rate, cannot do so without access to relevant material" (p 88).

2.41 Beyond this, there was criticism that this process was good at producing a response to obvious crises—AIDS was quoted—but less good at stimulating research into hitherto intractable problems. As the Scottish Home and Health Department had discovered, the wish to increase effort in fields like mental handicap and psychogeriatrics could be frustrated by a dearth of good research applications, and established research workers in one field were reluctant to adapt their expertise to another field (P 324). Thus, much of the evidence quoted above (para 2.8) as to the inadequacy of peer review as a means of allocating funding for new disciplines had implications for the adaptation of priorities to fit new circumstances or opportunities. Another implication was that priorities adapted well within existing methodologies and disciplines, but less well where opportunities for research opened up across disciplines (pp 142, 355–6).

Influence of Funding Institutions

2.42 A specific set of influences on priorities were seen as being exercised by those bodies which fund research. These influences were institutional and structural rather than the result of conscious decisions. Professor Davis again put the basic point succinctly. "Any control [over priorities] there is, is exercised by grant giving bodies" (p 88).

2.43 The Committee have already referred (para 2.17) to the weakness of NHS input into determination of priorities. The British Postgraduate Medical Federation of the University of London, having said that priorities in medical research were influenced to a considerable extent by the funding source, stated that "the percentage of NHS expenditure devoted to research and development is pitiable" (p 331). The South East Thames RHA, in the context of health services research, considered that "the determination of research issues may be greatly handicapped by the 'distance' of the DHSS from NHS functions and problems'' (p 288). Dr. Michael Ashley-Miller, Secretary of the Nuffield Provincial Hospitals Trust, said that ''where research directly related to the health service is concerned, it is unfortunate that neither Regions nor Districts have access to research funds of any significance ... At times it is not apparent that priorities determined by the centre really reflect the needs and priorities of Health Authorities responsible for delivering services'' (p 11).

2.44 Many charities raised their funds directly from the public and the amounts raised reflected the perception by the public of the relative importance of diseases. The Ciba Foundation believed ''this is the only mechanism by which members of the public can have a direct impact on the determination of priorities ... It does, however, have its limitations'' (p 70). Among these were the orientation of charities to particular diseases or organs which, as the Association of Clinical Professors of Medicine pointed out, made the charities unsuitable for funding molecular biology and immunology. Reliance upon such charities and the pharmaceutical industry ''has unquestionably changed the pattern of activity in academic departments of medicine and has resulted in high priority being given to research which these departments would not normally choose ... and which are not necessarily in the best interests of the Health Service'' (P 266).

2.45 Charities' funding was constrained by their charitable objects. The Imperial Cancer Research Fund could only undertake research on cancer; the MRC could fund anything. The ICRF said ''the pattern of public giving to the medical research charities, with its inevitable emphasis on cancer, must be accepted. It has tacitly been taken into account for nearly 50 years in planning government expenditure on cancer research, which acknowledges that approaching 80 per cent of expenditure in this field comes from the private charitable sector. This is not a distortion in support, so long as it is taken into account in the planning of the Medical Research Council's activities, as now happens'' (PP 313–4).

2.46 The Minister for Health accepted that ''one of the things we ought to be trying to do is to form a view about the importance of things for which the public does not now so readily vote with its pocket, and perhaps therefore direct the public funds ... to those areas'' (Q 2094). Awareness of this balance ran throughout the evidence—for instance, the Fellowship of Engineering made the point, and drew the conclusion that ''close liaison between major funding charities and the Medical Research Council is commended'' (p 110). The North West Thames RHA pointed to the lack of any mechanism for discussing the priorities of the charities and industry with the Research Councils or the NHS, with ''a real danger of priorities being distorted'' (p 217). The Institute of Biology said: ''To some extent commercial and charitable funding are bonuses ... Public funding must be prepared to redress the balance by investment in less 'popular' topics and in fundamental studies'' (p 144).

2.47 There were potential weaknesses in public support of some areas of research which were the result of the boundaries of each funding body's remit. The Fellowship of Engineering quoted the funding of medical engineering. This ''used to fall between the briefs of MRC and SERC. More recently it has been funded through the Materials Committee of SERC ... Doubts were expressed about the appropriateness of medical engineering being dealt with solely by the Materials Committee'' (p 110). On the other hand, the MRC/ESRC Unit in Sheffield welcomed its position between the two Research Councils (Q 807).

2.48 The means by which research was financed also had an important effect on research priorities. There were differences of opinion about the value of projects—that is, short term grants. On the one hand, these had positive advantages, particularly in building up new areas of research. Mrs Currie said that ''on the nursing research side ... we have actually been recommended that we should have people on short term contracts, because otherwise the very able people concerned will get worried about coming out of clinical practice and lose that side of their career'' (Q 2108). On the other hand, in organisational psychology, Dr. Wall at the MRC/ESRC Unit said that ''we can get good psychologists and good researchers, but ones who have experience in the sort of area we need, we train ourselves, but if you are funding a lot of short-term research projects, you have a problem with training going on at the same time as the research'' (Q 810).

2.49 The pharmaceutical industry was generally acknowledged to be the largest single interest funding medical research in the United Kingdom (P 145). Approximately half of this expenditure was supported by sales to the NHS through the Pharmaceutical Price Regulation Scheme (PPRS). It therefore represented a level of research spending negotiated between the

Government and the industry. The Government regarded this as Government support (Q 2148); the ABPI regarded the PPRS as a means of limiting profits (P 20, Q 107). The industry pursued some strategic or basic research (Q 233) and moreover supported the Office of Health Economics, which pursued health economics research across a wide spectrum (Q 1320). Dr. Robert Maxwell pointed out, however, that "there are some questions which the pharmaceutical industry is not very likely to ask" (Q 897); though the ABPI itself described some of the limitations which its own commercial interests forced on the industry (QQ 178–80). Both Sir David Weatherall (QQ 87–8) and Dr. Ogilvie of the Wellcome Trust (Q 233) believed not only that industry had good links with researchers, but that a certain amount of valuable strategic or even basic research was being produced as a result of industrial support. Indeed, the Wellcome Trust produced an interesting analysis of the balance of advantage between industrial and charitable funding. It might be the case that industry would direct research towards their own priorities, not national ones: Dr. P.O. Williams gave the example of tropical disease drugs; but Dr. Ogilvie pointed out that "if we leave it just to the charities, most of the changes in direction will not be towards diseases of greatest numerical importance ... There would be great holes in the research effort" (Q 232).

2.50 An important aspect of funding was that it should be flexible. Sir Patrick Forrest said that he felt that the Chief Scientist's Office in the Scottish Home and Health Department "seemed a fantastically valuable function of almost venture capital. You could prime small projects, back unknown individuals, the dark horses who might turn out not to be runners or might be winners, before we went to MRC or Wellcome. It is interesting now to note the enormous pressure on these [other] funding agencies by people who perhaps would not have been there before, not just for providing money but to actually do an MRC-type project ... Perhaps we are getting the wash off MRC and Wellcome who are not able and have stated, as a matter of policy, they are no longer supporting short-term projects but will be looking to fund fewer, major programmes" (Q 472).

2.51 At the Trent Regional Health Authority Headquarters the Committee discussed the Locally Organised Research Scheme (LORS). The RHA set out a full description of the scheme in its evidence (PP 98–100). The North East Thames RHA (pp 193–215) and the South East Thames RHA (pp 292–305) also gave very full descriptions of how LORS operated, and what sort of research it produced, in their respective regions. The purpose of the scheme was to provide seedcorn for research. The MRC, while noting that as a source of funds LORS was "relatively limited" said that "it could be very important ... I think we would regard it very much as complementary to the sort of things we do ... It provides in particular for a young clinician to be spotted and given an opportunity to show for six months or a year what he can do, and be trained perhaps in one of the most basic aspects of research, the art of measurement..." (QQ 1980–1).

2.52 For the funding of health services research, the Heads of Academic Departments of Social and Community Medicine made the point that "a system in which the DHSS and Health Authorities both initiate most health services research proposals, and are the principal users of the results, might be expected to be more sensitive at meeting needs than one in which funding institutions react to the proposals of researchers" (P 250). Concern was however expressed at the fact that DHSS priorities were "largely politically and administratively determined" (P 250).

2.53 Many witnesses made the point that funding had to be pluralistic. The rationale of this was spelt out by Dr. Gordon Smith, one of the Trustees of the Wellcome Trust. The Wellcome Trust was unique in the scale of funding it would undertake—its budget of 1986–87 was around £35 million (P 38)—and in the fact that, as a foundation, its charter allowed it to undertake a very wide range of activities right across the medical research spectrum. The MRC and the Wellcome Trust were therefore in a sense complementary, and tried to remain independent of each other, so that each acted as a safety net for the other (Q 187).

Dissemination of Results

2.54 The majority of witnesses believed that the dissemination of research results through learned journals was satisfactory.[1] The ABPI noted that "the patent system and the disciplines of the market place require the British pharmaceutical industry through its individual members to publicise promptly the findings of its research" (P 19). The Wellcome Trust noted that researchers wanted to publish, though they remarked that new knowledge might escape notice by being published in a little-read journal; though referencing was so elaborate that anyone who knew how to look should be able to find what is being sought, and "symposia, society meetings, and abstract journals are all available" (P 39). The Royal College of Physicians of Edinburgh thought that results of research "are undoubtedly adequately disseminated" (P 52). The Royal College of Physicians and Surgeons of Glasgow said the same (P 56). Professor Bouchier voiced some worries about the expense of learned journals. Commercial equivalents were not entirely adequate (P 75). Almost alone, Mr Peter Styles returned "an unqualified 'no'" in reply to the question whether results were adequately disseminated: it was not easy for industry to identify research with potential for development (P 169).

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[1] For example PP 75, 159, pp 68, 72, 86, 175, 257, 279, 312, 356, 388.

2.55 In the midst of the general agreement that the system was adequate, a few voices were raised to suggest that the very plethora of journals, their expense, and the expense of travelling to symposia and meetings combined to pose problems. This was the view of the Standing Conference of National University Libraries and the National Health Service Regional Librarians Group (pp 313–4). The point about travelling was made more forcefully by Professor Bell of the Surgical Research Society. "One side-effect of the university cutbacks is that people are not able to go to meetings, listen to research, prevent overlap and duplication, which is what we are trying to avoid happening in the first place" (Q 1150).

Duplication

2.56 Duplication was not generally perceived as a serious problem. Stress was laid on the fact that some duplication was desirable. Professor Davis linked the issues of dissemination and duplication: "there are more than enough medical journals ... The whole point of science is that results can be duplicated and they must be if the truth is to be established" (p 88).

2.57 The natural forces working against unnecessary duplication were described by Professor Denis Noble. "I am not convinced that this is a major problem. Many of the advances in my own field have come from young researchers starting off by repeating the work of others. In this process they have developed a new line because they have looked at the problems with new eyes. It is difficult therefore to know when duplication is strictly unnecessary. Over the long-term, no research group is viable if it merely duplicates the work of others, so there is a strong tendency against mere duplication already built into the system" (p 186). St. Mary's Hospital Medical School went further than this, and advocated that "more effort should be made to ensure that institutions are encouraged ... to collaborate" (p 355). The one type of research where fears of useless duplication were expressed was research funded through LORS. As Trent RHA said, a "problem with the conduct of the schemes is that there is no guarantee that a particular topic is not being researched in several Regions at the same time with funding from respective Regional Health Authorities. This may represent useful replication, assuming comparable methodology, but may on the other hand imply unnecessary duplication" (P 99).

Application of Research in Patient Care and Health Education

2.58 Sir David Weatherall had no doubt that it was the case that research was reflected in improvements in patient care and health education (P 3). He listed examples (P 6). He did however add that there "is often a serious delay between what has been worked out in a research laboratory and what happens in clinical practice". He cited epidemiological work on cigarette smoking and the application of molecular biology to the identification of causes for genetic disease. "Because of the way the NHS is organised there seems to be a genuine communication problem between the basic researcher and those that direct health policy" (P 3).

2.59 The ABPI believed that the industry transmitted the benefits of research to the public efficiently. Such delays as there were arose from the regulatory system for licensing new pharmaceutical products (P 20). Dr Humphreys gave a slightly different view: "improvements in patient care or health education may carry some benefits for individuals, but not necessarily for whole populations. The present AIDS campaign is having some benefit, but those who are determined to pursue their own lifestyle will do so regardless of the information developed by research in the absence of firm discipline" (P 159). The point was echoed by Sir Christopher Booth, Director of the Clinical Research Centre (p 38). Professor Kennedy thought equally that "one of the deficiencies of the system, of the health care system, in the United Kingdom—and I think Government has a part to play in this deficiency—is the slowness with which we implement and transmit into practice things that are of benefit to health. One only needs to take cigarette smoking or consumption of alcohol to see the slowness with which that message, which is clear and absolutely uncontroversial, is transmitted'' (Q 260).

2.60 The Committee of Vice-Chancellors and Principals (CVCP) said that in ''fundamental work there may be a long time lag between basic discoveries and improvements in patient care and health education. Some findings need long and complicated clinical trials. Discrete clinical procedures of clearly demonstrable value and commercially exploitable techniques are both usually quickly adopted. But activities that involve changes in practice or impinge on other services and have implications for policies and budgets outside the medical research area are introduced far more slowly, if indeed at all'' (P 179).

2.61 South West Thames RHA believed improvements in patient care arising from research tended to be ''patchy''. There was a problem with the conservatism of those working in the Health Service (p 306). North West Thames RHA also identified such ''inertia'' as a problem, and ''apart from resistance to change, there are some areas in which medical research is too far ahead of resource allocation for changes to be implemented'' (p 191). North West Thames RHA further made the suggestion that resource allocation in the NHS might be linked in some way to the application of relevant research findings. ''It would be very difficult to impose sanctions against, for example, those places which do not carry out day surgery or have not changed their varicose vein surgical methods in the light of research findings. However, with the development of performance indicators and the review system in NHS management, some steps to improve the application of research may be possible'' (p 192).

2.62 A failure to implement swiftly the results of biomedical research in service could harm both service and research. This was described by the ICRF. ''There is a related problem that arises from the fact that, as the products of research are applied to clinical services or diagnosis and treatment, there is a gradual transition from research to service. Inevitably, this is accompanied by a lag in the provision of adequate support for the service and so a tendency for funds intended for research to be supporting a service that should be provided by the National Health Service. There is therefore a need for a high level forward planning group within the Departments of Health and in the Regions that considers such prospective advances and undertakes research into the costs and changes in the pattern of care which they imply'' (P 314).

Training

2.63 A general view in the evidence on training could be summed up in the words ''medical researchers of the future require adequate training in the methods of research. They also require time for this training'' (P 3). Witnesses frequently criticised the lack of training in research methods and the disincentives which academic clinicians faced. Though there were criticisms of the direction taken by training, the majority criticism was about its extent and quality.

2.64 Among those arguing for more training in research methods were the South West Thames RHA (p 306) who wished six months research training for all doctors. Present training was ''haphazard'' (p 99) and failed to teach research methods properly (pp 10, 115). ''The needs of research and research training rarely figure in the priorities set in manpower planning in the NHS'' (p 356). Innovation in training was neglected because ''medical educational research is regarded as nobody's baby'' by DHSS and DES (p 377).

2.65 More attention in research training was required for interdisciplinary experience with an opportunity to move from clinical medicine into other sciences and back again. Professor Smellie of the Institution of Biochemistry at the University of Glasgow argued that 10–15 per cent of medical students should have training to Honours degree level in a related scientific discipline (p 279). The Scottish Home and Health Department were among witnesses arguing that training did not provide adequately for health services research (P 226). Dr. J.E. Cotes of the Department of Occupational Health and Hygiene at the University of Newcastle upon Tyne argued that research training ''is on average of too low a standard to be useful (except as an embellishment to a CV)'' (p 79). The Wellcome Trust considered that too few post-doctoral level scientists were being trained for the country's needs (QQ 214–7) and St Mary's Hospital Medical School pointed to a shortage of good people in interdisciplinary fields like bio-engineering or molecular biology (p 356). The quality of training led to a situation described by Professor Healy of the London School of Hygiene and Tropical Medicine as one where ''much clinical research is pretty amateurish, being something of a spare time activity by people whose main interests may be elsewhere'' (p 131).

2.66 Many witnesses lamented the decline in intercalated degrees[1] which were "in great peril" (p 325), and this development was "most retrograde" (p 279).[2] The Professors of the United Medical and Dental Schools of Guys and St Thomas's Hospitals strongly argued for a reversal in the decline of funding for intercalated degrees. As funding from the MRC declined, only students who attended a university with a six year medical degree course, for example Cambridge, were guaranteed a year of undergraduate study with research experience. This trend was both reducing the number of medical students with the aptitude for research and also encouraging a view that medical education was like an apprenticeship with rules and skills to be learnt by rote. Instead it was desirable to encourage a critical attitude. This view was reinforced by Professor Griffiths, Dean of the Faculty of Medicine and Dentistry at Dundee University (Q 434).

2.67 There were positive disincentives to research training and a career in academic medicine. Clinical researchers working in medical schools needed honorary NHS contracts. The long-term difficulties which the NHS had experienced over the relative proportions of registrar, senior registrar and consultant posts within the service as a whole cut across the requirement for a proportion of honorary posts at these levels for clinical researchers. Many witnesses expressed concern at the implications for research of the activities of the Joint Planning Advisory Committee (JPAC) and the Hayhoe Committee (which produced the report "Achieving a Balance").[3] Professor Semple of the University College and Middlesex School of Medicine gave the Committee a useful summary of what the effects might be: essentially there would probably be too few posts for researchers, and clinical research would therefore suffer (p 274). The lack of a career structure for academic medicine was regularly criticised[4]. Young doctors felt obliged to get a foot on the professional training ladder as soon as possible (pp 18, 280) and the increased competition for NHS posts caused young doctors to wish not to "waste time doing research" (P 76). "The NHS with its system of early tenure and relatively highly paid posts inevitably 'seduces' many young men and women from pursuing clinical research" said the Council of the Royal College of Physicians of Edinburgh (P 53). The Deputy Chief Medical Officer of the Department of Health and Social Services in Northern Ireland identified a "pressing need to make careers in academic medicine more attractive" (p 91). The lack of a career structure applied equally to non-clinical staff (p 113) and the Association of Researchers in Medical and Science complained that the outdated absence of a rational career progression for researchers had caused a "very serious crisis in recruitment" (p 20). Sir Peter Swinnerton-Dyer summed up: "the structure of clinical training is one that does not seem to have been thought out in terms of the possibility of a research career ... if you are going to move into a research career, you have to continue to produce your career structure out of material that is not designed to be altogether helpful" (Q 2067).

2.68 The Professors of the United Medical and Dental Schools of Guys and St Thomas's Hospitals said that DHSS policy for the NHS discouraged research knowledge and experience. There were no bonuses (financial or otherwise) to be gained from such skills. It ought to be possible, at very little cost, for the DHSS to reverse this trend. "The historical grip of the Royal Colleges on post-graduate dental and medical education should be relaxed or altered to increase their research component" argued the Dental School of the University of Manchester (pp 362–3).

Funding

2.69 Finally, an overwhelming number of witnesses referred to severe shortages of funds for medical research.[5] Professor Bouchier put the case in general terms. "I have to say that I believe that the full research potential of our universities and hospitals is not being realised primarily because of a shortage of funding. Twenty five years ago, with a very similar research infrastructure to what we have today, the nation's research output compared favourably to the United States of America; and this on a budget which was meagre in comparison to that of the Americans. Unfortunately for very many reasons research funding has not kept pace to realise the full potential in this country. We have now fallen far behind America and indeed have been overtaken by a number of continental countries. Yes, there is a great need to use limited resources wisely and frugally but many of the difficulties which this country is now experiencing in formulating appropriate research strategies can only be solved by a willingness to inject more money into the system'' (P 77).

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[1] An intercalated degree entails an extra year of study, including some research experience, in the middle of a student's basic medical course before graduate clinical training.

[2] See also pp 18, 29, 73, 175, 217, 233, 356.

[3] e.g. pp 17, 57, 325, 356.

[4] e.g. PP 78, 265–6, pp 47–8, 87, 332, 388.

[5] e.g. pp 16, 48, 56, 72, 78, 88, 161–3, 175, 267, 280, 324, 357, 382, 389.

2.70 The CVCP said they were ''seriously concerned about the inadequate funding of the dual support system'' (P 177). They made estimates of some of the reductions in funding which had occurred. Between 1980–81 and 1986–87 there had been a net loss of 551 full-time wholly university-financed clinical academic staff in universities. This was a reduction of 21 per cent. Replacing these staff would cost about £14 million, without associated indirect costs. Though there had been an increase of 1106 full-time clinical staff (many on short-term contracts) who were not wholly university-financed which was attributable to a growth in external research income, they also entailed a significant additional indirect cost to the university. Much of the shortfall in UGC funding was related to clinical academic salaries: the shortfall in Government provision to meet pay awards would be slightly lower in 1987–88, but would still be far higher than the 1985–86 shortfall (PP 181–3).

2.71 Dr Rees argued that ''there are particular problems in medical research at the clinical end which need rather serious attention and need rather major developments. The basic research infrastructure which is associated with clinical research does need substantial strengthening in the modern areas of science, molecular and all biology and neuro-biology and so on. So the question 'how much more money?' has to be answered in relation to what we want to do. I think if all you want to do is to take the pain out of the present system and fund all good research projects that come along ... then probably ... it is of the order of [£15 million to £20 million for the MRC], but if you want to do a real job and build subcentres of excellence in bio-medical research juxtaposed with clinical teaching and practice in research, then one would need more'' (Q 1916).

2.72 Several witnesses made the point that was put succinctly by Sir Walter Bodmer: ''it is little less than appalling that a department with an approximately £20 thousand million annual expenditure on the Health Service funds a research programme of its own at a level hardly more than £20 million. Indeed, the overall expenditure on medical research (outside the pharmaceutical industry) is of the order of £300 million, namely only about 1.5 per cent of the Health Service Budget, a level which would be considered totally inadequate by most major pharmaceutical companies to guarantee their medium to long term future. This emphasises the need not only to increase considerably the direct resources within the Department of Health for research relevant to the application of advances to new approaches to prevention, diagnosis and treatment, but also to increase the overall research expenditure base which, as already emphasised, provides so many new and exciting possibilities for significant practical advances'' (P 314).

2.73 In summary, many witnesses echoed the tone of Sir David Weatherall, the first witness to give oral evidence to the Committee, in his initial memorandum: ''British academic medicine is currently facing particularly serious problems and seems to have lost direction. There are many reasons. It has been hit hard by cuts in health service funding with deterioration in the quality of the teaching hospitals. It has also suffered from the cuts of university funding and in the availability of support from the research councils ... I hope I am not painting too gloomy a picture of the current state of medical research in the universities. I have tried to emphasise what is good, in particular the principle of the dual support system and the interaction of the government and charitable organisations in the support of research. But I hope that I have left the Committee in no doubt about the organisational problems that exist ... It is a great shame that we are facing this crisis at a time when the basic sciences are offering us the possibility of making the next 50 years the most exciting and productive for medical research; we must not miss this opportunity'' (P 5).

PART III OPINION OF THE COMMITTEE

CHAPTER 3 ESTABLISHING PRIORITIES

3.1 The Committee could not fail to be impressed, from the tone of almost all the evidence they received, by the atmosphere of despondency that reflected the low morale of those engaged in medical research. It is not only that funding is so inadequate that good research proposals are not supported; it is not only that career prospects in research are often dismal; it is not only that patient care frequently inhibits research activity, important as all these factors are. The overriding cause of the collapse of morale is the impression, right or wrong, that neither the NHS nor the DHSS demonstrates any awareness of the importance of research nor is prepared to devote time, effort and resources to promote it, save only when either an immediate saving of money is in prospect or when public concern, as in the case of AIDS, forces its hand.

3.2 Either the Government considers that medical research does not matter or else it has simply failed to convey to the medical community and the public the fact that it thinks medical research does matter. Whichever interpretation is right, the Government must put this right now or it will have disastrous effects that will take years to rectify.

3.3 In priorities for medical research two crucial if negative truths stand out. First, priorities do not announce themselves, either in theory or in practice; and secondly, it is by no means obvious what the needs of the National Health Service are.

3.4 Although, on the face of it, ministerial policy might define the needs of the NHS for the purpose of setting research priorities, it cannot in fact do so. The Johnson and Nixon initiatives against heart disease and cancer in the United States show that government action, on however generous a scale, is not all that is needed to solve health problems. Throwing money at a problem in the absence of promising ideas will not bring about any breakthrough. Nor can intervention at the national level identify the more detailed service needs of the NHS. Indeed, without criticism of either party, the Committee draw a clear distinction between ministerial policy and NHS research needs. They are not necessarily the same. Medical research has to inform departmental policy as much as be directed by it.

3.5 Better health for all is the goal, but it is not a clear one. The evidence put to the Committee reveals real differences of approach as to how better health is to be achieved, or even about what it consists of. Should medical research concentrate on cure or prevention? Which approach will in the long term yield greater benefits? How are benefits to be measured for the purpose of establishing priorities? These questions have complex answers. Because of that complexity, any formal mechanism for directing national priorities would almost certainly be inefficient and could stifle research. Instead the Committee prefer to rely on pluralistic funding and administration of research, in which good ideas compete for support. The aggregate of decisions taken by different interests is more likely to reflect the balance of needs and opportunities in research than a centrally directed research effort, provided that the different interests are aware of each other's priorities.

3.6 Medical research has undergone a great deal of change in recent years. This is not yet over. The Committee believe however that many of the principles on which medical research is administered in the United Kingdom, and the institutions which have arisen from these principles, need no fundamental change. They therefore wish to state early in their recommendations their conviction that:

(i) the present dual support systems for medical research (see para 1.10) are sound in principle;

(ii) the MRC is the right vehicle for funding basic and academic clinical research;

(iii) the UGC (and its successor the UFC) should retain responsibility for funding adequately the academic infrastructure for medical research.

3.7 The Committee also consider that medical research and medical education should be inseparable. They recommend that medical research should continue to be carried out for the most part in, or in association with, the medical schools and universities, rather than in national centres. There are four reasons for this. First, research cannot easily be separated from hospitals because of the demands of clinical research. Secondly, the growing interdisciplinary and inter-faculty nature of medical research, and its dependence on a critical mass of different disciplines, makes a broad academic base desirable. Thirdly, the bulk of research funded by the medical charities, and indeed industry, should as far as possible be carried out in the same places as MRC-funded research, so that they are not isolated from one another. Fourthly, medical research and education should continue to stimulate each other.

3.8 The Committee reject, in the specific case of medical research, the ABRC's proposal[1] for the ranking of higher education institutions because this would imply that some medical schools could be run on a teaching-only basis.

Science-led or Problem-led Medical Research?

3.9 Implicit in much of the evidence received by the Committee are two different approaches to medical research. One is science-led: it emphasises the role of the individual researcher (or research team) in developing new lines of enquiry. The other is problem-led: it emphasises the need to study the current health status of the population, and present methods of treatment, as a means both of directing research towards the problems with the most serious effects, and of ensuring that medical practice, whether existing or new, is the best possible.

3.10 In other areas of civil science the recent trend has been towards problem-led research, with emphasis on strategic targets for research and focussing on specific applications or practical opportunities, while preserving a sound level of basic research. The Committee have endorsed this trend, most recently in their report on Civil R&D.[2]

3.11 But the accepted wisdom of biomedical research is that the science-led approach should be dominant. The Committee take the same view. Better results will be achieved by supporting good ideas and advances in science as they arise, than by concentrating on recognised problems regardless of whether promising leads are in prospect. More than one witness (para 2.2) drew attention to the work of Comroe and Dripps and their demonstration of the importance of maintaining a high level of science-led basic biomedical research on the grounds of the historical significance of serendipity in medical science.

3.12 The Committee therefore recommend that the main focus of public policy in medical research should be the establishment of a strong infrastructure for research in well-found laboratories and the supply of a strongly motivated and well trained research community. This, in theory at least, is the existing system. When new problems are identified and priorities change, research leaders should be encouraged to move to the new areas in order to build up scientific strength and new research teams. But the tradition of investigator-initiated medical research should be preserved.

3.13 On the other hand a wholly science-led approach cannot be effective. Some decisions about priorities have to be taken, particularly when good scientific ideas outnumber the funds available to pursue them. The NHS has changing needs and priorities must reflect this. The public rightly expects a response to new problems such as AIDS. A system which relies on the initiative of individual scientists will develop gaps and those can become self-perpetuating: funds go to the best people and the best people are then attracted to well-funded areas. Potential gaps have to be identified early if research teams are to be built up in the right specialities.

3.14 As the funding of medical research has come to rely on several sources (indicated in paragraph 1.10) and is not dominated by any of them, so the need to make each aware of the interests of the others is becoming more apparent. The MRC, for instance, needs to know where work is being planned by the charities; both have to be aware of the requirements of the NHS; all stand to gain from a knowledge of what research is going on in industry; and the Health Departments must be conscious of the overall shape of research effort and the gaps which may be developing. The DES and the Health Departments ought to be acutely aware of the interactive effect of their respective policies on medical education, training and research.

3.15 This suggests that some setting of priorities and some emphasis on problem-led research is essential. The Committee believe so. Yet remarkably there appears to be no coherent means of setting priorities beyond that which is provided by the MRC in discussions with the DHSS. This is becoming gradually less effective as these bodies account for a shrinking proportion of national spending on medical research. The lead from the DHSS is weak, in contrast with the approach of the Scottish Home and Health Department. The only body which appears to accept some responsibility for supporting underfunded areas of research is the Wellcome Trust. The Committee do not believe that Governments should rely on charities to fill gaps in national research effort. The remedies proposed by the Committee are given in Chapter 4.

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[1] A Strategy for the Science Base, para 1.31.

[2] 1st Report (1986–87).

Applied Research

3.16 The Committee's reservations about existing priorities in medical research in the United Kingdom begin where the MRC's responsibility for basic research shades into its responsibility for clinical research. The Committee have received some evidence which suggests that the MRC is not as vigorous in pursuing the latter as it is in pursuing basic research; the MRC denied this (paras 2.28–30). The Committee noted that the Clinical Research Centre (CRC) at Northwick Park has represented a major commitment by the MRC to clinical research: they assume that this commitment will continue after whatever institutional changes that are planned for the CRC have been effected. The Committee were moreover convinced, especially following their visit to America, that there is no real conceptual divide between basic and academic clinical research. The Committee however feel that, since clinical research involves patients and patient care, this begins to move away from the basic science field which belongs to the Research Councils and different considerations apply. These considerations are bound up with the administration of clinical research, and the special demands it makes: that patients are cared for, often under regimes which are more complex and expensive than normal regimes of care; and that a significant number of the researchers involved must be clinicians.

3.17 The Committee consider that the main defects of the present system lie in applied research and in the application of knowledge gained from research. Therefore they begin by recommending that the MRC should take pains to strengthen the contribution of clinicians to its work. The Committee, in what follows, have no wish to disturb the responsibilities of the MRC or its funding, nor to create an artificial division in the continuum of basic and clinical research supported by the MRC. But the MRC must spend effectively those funds returned to it under the ''concordat'' in 1981 and counter any tendency to concentrate too much on basic research when funds are short. As new techniques, particularly in molecular biology, pervade the whole range of medical research and become standard diagnostic tools, the MRC's awareness of the clinical applications of basic research should be emphasised.

NHS

3.18 The funding of applied research in medicine is known to be troublesome. This was demonstrated by the abortive transfer of funds from the MRC to the DHSS following the Rothschild Report and their subsequent return to the MRC. But the situation is still unsatisfactory. In the Committee's opinion, the key lies not in the DHSS but in the NHS.

3.19 The NHS is inextricably involved with medical research. It is responsible for the health of the nation in which research has a vital role. It is the ultimate customer for nearly all medical research, whether funded by the MRC, the charities, the pharmaceutical and medical equipment industries or done in the NHS itself. Practically all clinical research is carried out in NHS hospitals; it involves clinicians on NHS contracts (whether they are NHS clinicians or academics on honorary contracts), NHS nursing and ancillary staff, and NHS patients. Teaching hospitals provide the tertiary referral facilities for many parts of the country because of their academic and clinical strength in various specialities. The NHS has to absorb the consequences of successful research: better health care may often involve more expensive treatment, though not necessarily; research will sometimes produce cheaper treatment. Last, but by no means least, the resources on which clinical medical and dental education are based are the NHS's responsibility.

3.20 Yet medical research and the health services have come to be administered separately. There are good historical and theoretical reasons why medical education and research take place in universities and are the responsibility eventually of the DES. But administrative remoteness of medical research from the NHS is a source of weakness to both sides.

3.21 In particular there has been a serious divergence of administrative approaches between medical research and medical services in the United Kingdom. Medical research requires critical masses of expertise and expensive equipment in particular locations, normally with access to large centres of population. By contrast NHS policy has been to disperse such unequal centres of excellence (which provide the privilege of exceptional service to those with access to them) in favour of providing a service of equal standard throughout the United Kingdom. The effect of this policy, pursued through the Resource Allocation Working Party (RAWP) process, has been to harm some centres of medical research excellence. Through RAWP the NHS funds which used to be concentrated in the great London and provincial teaching hospitals have been more evenly distributed throughout the country. Within RHAs teaching districts have also lost their privileged budgets to some degree. While this shift in resources has brought about service benefits and some expansion of research in some provincial centres, the overall effect on medical research, which depends on concentrated excellence, has been a contraction, particularly in the London hospitals; and this has been compounded by cutbacks in general UGC funding. The two dual funding systems (para 1.10) have thus been working against one another.

3.22 The Committee believe that no research system can function effectively when the principal customer for research has so small a direct input into the initiation of research programmes. First, neither the NHS nor the DHSS spends much, in comparative terms, on research. The main funding bodies are the MRC, charities and industry, each with an orientation different from that of the NHS. Secondly, as long as medical research is primarily initiated by the researchers, the needs of the NHS and its problems will be met only if those needs are clearly expressed. The needs are not so expressed.

3.23 The Committee recognise that many administrative links exist between medical research and the DHSS. In particular, since the ''concordat'' of 1981, there has been an annual ''stocktaking'' meeting, an account of which is published in the annual DHSS Handbook of Research and Development. Representatives of the MRC and all the Health Departments attend this meeting. The Office of the Chief Scientist in the DHSS and the Scottish Office provide other links, and this can be a successful mechanism, where the scale is right, as in the Scottish Home and Health Department.

3.24 The DHSS is however not to be identified with the administration of the NHS, in spite of the intimacy of their relationship. The Committee were dismayed by the description of the purpose of the DHSS research programme given by the Chief Scientist: ''The main aim of DHSS health research is to provide guidance to Ministers on ways of improving the efficiency and effectiveness of the health and personal social services by promoting improvements in organisation, operation and administration'' (P 410). Ministers need a research programme, obviously. The NHS needs a research programme also, and it is likely to be different, both in scale and kind.

3.25 The Committee do not underestimate the NHS's local interest in research. NHS managers, whether at Regional or District level, have freedom to commission the research they need from their own allocations; the Regional Health Authorities have notional research budgets within their overall allocations; and Regions have Research Committees which administer the Locally Organised Research Scheme. The Committee applaud the arrangements described to them during their visit to the Trent RHA, which has been a relative gainer from the RAWP process over the last few years. The RHA has given extra support to research with these funds. Within the Region there are three medical schools, two of them—those at Nottingham and Leicester—only a few years old. In Sheffield alone there is a medical school, a joint MRC/ESRC Research Unit, and a DHSS/RHA Unit. A good illustration of the sensitivity of the Trent RHA to the needs of academic medicine has been a regional readjustment of the SIFT allocation to the teaching districts to take account of the demands on them.

3.26 However, without entering the public dispute about funding of the NHS as a whole, the Committee see that those working in the NHS are increasingly hard pressed to maintain a level of service and this directly affects research. Clinicians are being diverted from research by the demands of patient care while medical staff and management alike have less opportunity to understand, disseminate and implement research results. Symptomatic of the NHS's lack of awareness of research needs are the following: the first report of the Hayhoe Committee made no provision for the honorary NHS contracts needed by medical researchers; there appear to be no administrative efforts on the part of the NHS to prevent service pressures from constantly eroding the research time of clinician researchers; no formal consideration is given to the level of spending on medical research compared with the level of service spending; the new White Paper on primary health care[1] contains no proposals for a rigorous research programme either to develop primary care further or to assess the wider effects of the changes now being introduced.

3.27 Too much is left to chance in ensuring firstly that the NHS plays its part in formulating its research needs and supporting medical researchers in meeting those needs and secondly that the NHS is aware of what research is being done in the United Kingdom. The NHS exists to promote the improvement of the nation's health; medical research has an important part to play in achieving that end; the NHS should therefore play its part in supporting medical research. The means by which it should do so include an integrated research programme. There is no lack of push from medical researchers in the United Kingdom; what is missing is enough pull from the NHS.

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[1] Promoting Better Health: the Government's programme for improving primary health care, November 1987, Cm 249.

CHAPTER 4 NATIONAL HEALTH SERVICE RESEARCH

4.1 The Committee's central recommendation is that the NHS should be brought into the mainstream of medical research. The gaps identified in the previous chapter have to be closed. The NHS should articulate its research needs; it should assist in meeting those needs; and it should ensure that the fruits of research are systematically transferred into service.

4.2 Up to a point the Committee have identified the same failing that Lord Rothschild's report sought to correct in enunciating the customer/contractor principle. The NHS is the main customer for research results and so it should commission research for which it perceives a need. But this oversimple proposition has to be qualified for reasons already touched on: the distinction between basic and applied research is blurred, and the initiative in the best biomedical research is likely to arise among the scientists rather than the service administrators. The NHS, both as customer and as the provider of hospital facilities and patients, has to complement the work of the MRC and other funding bodies, not to displace them. Therefore the Committee's proposal outlined below differs in two vital respects from that put into effect by the Government in 1971, after the Rothschild report. It does not involve withdrawing money from the MRC; and it places the primary responsibility for applied research with the NHS, not the Health Departments.

4.3 The Committee consider this to be an opportune time to recommend an adjustment to the organisation of the NHS since the matter is actively under consideration in Government. The development of NHS management with its own Board and with functional authorities for Health Education and Training (for management) highlights the absence of any identified research function in the NHS. An opportunity to improve the efficiency and cost-effectiveness of the service is being missed. The Chief Scientist's Office in DHSS may be adequate for the Department's internal purposes but it has certainly not proved capable of supplying the informed customer for health research envisaged by Lord Rothschild.

4.4 In order to meet the objectives of para 4.1 above, and on the grounds of efficiency and cost-effectiveness, the Committee recommend the creation of a new special health authority within the NHS, to which they refer hereafter as the National Health Research Authority (NHRA).

National Health Research Authority (NHRA)

4.5 The Committee stress that the NHRA should form an integral part of the NHS structure, as a special health authority equivalent to the RHAs. It should be organisationally—and physically—separated from the DHSS. The new Health Education Authority (HEA) and the National Health Service Training Authority (NHSTA) provide some organisational models for special authorities undertaking distinct functions for the NHS as a whole. If the structure of the NHS were radically altered, there would remain a need for a central agency to carry out the functions which the Committee propose for the NHRA.[1] There should be arrangements for the functions of the NHRA to be carried out throughout the United Kingdom. These arrangements would obviously provide for close liaison between the NHRA and any equivalent body carrying out its functions in Scotland, Wales and Northern Ireland.

4.6 In more detail, the functions of the NHRA would be:

(i) to identify on behalf of the NHS, and in consultation with medical research interests both public and private, those areas of research which should be given priority on the basis of service need;

(ii) to ensure, in conjunction with the MRC, an adequate research capability for the needs of the NHS in clinical, public health and operational research;

(iii) to commission research as necessary on behalf of the NHS;

(iv) to advise on the implications of NHS policy and practice for medical research, including the training and career prospects of medical researchers, and where conflicts arise to ensure that the interests of research are fully taken into account;

(v) to provide a point of contact between the NHS and the MRC, the other Research Councils, the UGC, the Royal Colleges, the medical research charities, the pharmaceutical and medical equipment industries, and any others with medical research interests;

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[1] If a substantial private sector were to be developed alongside the public health service, that private sector ought to shoulder a proportion of the burden of support for medical research and training.

(vi) to ensure that the results of research are efficiently disseminated and implemented within the NHS;

(vii) to promote the evaluation of existing clinical practice and to undertake technology assessment of both new and current procedures;

(viii) to promote systematic clinical audit (the evaluation of the appropriateness of treatment in specific cases);

(ix) to oversee the provision of statistical information for the NHS, in cooperation with the Office of Population Censuses and Surveys;

(x) to cooperate with the HEA in disseminating the results of research related to health promotion and the prevention of disease, with the Health and Safety Executive in occupational health and hygiene, and with the NHSTA in the training of NHS managers;

(xi) to assist in coordinating the work of Regional Research Committees.

4.7 Most of these functions speak for themselves. The Committee will expand on some of the practical implications. First however they stress that they do not see the NHRA as being in any sense a regulatory body for the whole of medical research. The NHRA's purpose is to enable other organisations involved in medical research to align their activities with NHS needs and policies, not to direct them on how to do so. But it would have a budget of its own to reinforce its advice.

NHRA's Role in Funding Research

4.8 The Committee do not believe that the NHRA should pay for basic research. The provision of public support for such research should remain the function of the MRC. There should be no serious overlap between the two. The NHRA would be concerned with an applied science base which matches the service needs of the NHS. In pursuance of this end the NHRA should take on a primary role in funding public health and operational research. It will also have a part role (shared with the MRC) in funding clinical research: the MRC will naturally sponsor clinical research arising out of advances in science, while the NHRA will sponsor clinical research with the purpose of ensuring the development of effective new treatment and its swift transfer into service. The NHRA would also cooperate as appropriate with the MRC and other Research Councils, the UGC, and the medical research charities in funding training fellowships in research areas where there is an identifiable service need for a greater research capability.

Research in General Practice and Primary Care

4.9 The Minister for Health described a range of research activities related to primary care (QQ 2180–1). Nevertheless, the Committee noted with regret that the White Paper on primary care made very few overt references to research.[1] The Committee believe that the Government's present shift in emphasis in health policy towards primary care should be underpinned to a greater extent by research programmes, with the purpose both of improving and extending the potential of primary care and general practice, and of establishing the best clinical balance between primary care and acute services. The Committee noted the role the ICRF was playing in general practice research in the field of cancer (QQ 1660, 1662), and they also noted that fruitful lines of research can spring from general practice (Q 259). They make recommendations below to foster the latter (paras 4.33–36). The Committee believe the NHRA would play a part in building up the research base in primary care and general practice, perhaps in cooperation with Family Practitioner Committees.

Research in Nursing, Dentistry and Disciplines Allied to Medicine

4.10 The Committee were conscious of the need to include special consideration of research in nursing, dentistry and disciplines allied to medicine in their report. They are convinced that these areas are being marginalised in the setting of national priorities for research, and in the allocation of resources. What they have sought to do is establish a system which will be just as responsive to the research needs of nursing and dentistry, and indeed of all services allied to medicine, as it is to the major traditional areas of research.

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[1] Promoting Better Health: the Government's programme for improving primary health care, November 1987, Cm 249

4.11 The NHRA should have a responsibility for overseeing all the needs and opportunities for research in the NHS. Therefore, unlike the MRC and other science-led institutions where it can be difficult for a new discipline to establish itself, the NHRA would seek to identify those areas—such as nursing, midwifery and health visiting—where the scale of operations and problems within the NHS justifies special support for research into those problems. The Committee believe this approach will provide new resources and a new stimulus for research in these areas. They recommend that some of these disciplines be represented among the membership of the NHRA.

Public Health and Operational Research

4.12 The Committee consider that public health research and operational research have been inadequately supported in the United Kingdom. It is especially serious that so large an organisation as the NHS devotes so small a part of its budget to seeking how to improve its own operations. To secure a research capability in public health and operational research, the Committee recommend that the NHRA should foster at least three centres for these disciplines, ideally linked to medical schools in different parts of the country. This would involve an expansion and consolidation of the units already funded by the DHSS and the Scottish Home and Health Department.

4.13 The Committee believe that this would encourage the long-term development of public health and operational research, by providing a flow of research contracts and career prospects capable of drawing talented researchers into the subject. The Committee have no doubt that these are areas of research which would repay—literally repay—investment. The Committee recommend that spending in these areas should therefore be markedly increased. What they propose would also supply the NHS with a number of institutions capable of producing first-class independent academic work which is attuned to the needs of the Health Service and the Health Departments. Another important advantage the Committee foresee arising out of these centres is that they would provide a pool of able people with experience and knowledge of the working of the NHS from among whom future NHS managers can be recruited.

4.14 The Committee believe that these recommendations underpin, rather than duplicate, the recommendations made in the Acheson Report on 'Public Health in England'.[1] In particular the recommendation in the Acheson Report for "a small unit" to be established within DHSS "bringing together relevant disciplines and skills to monitor the health of the public" will not be replicated by the NHRA. The latter's research base would help the DHSS unit to fulfil its "primary object ... to provide more effective support to the Secretary of State". Monitoring of health is not enough: systematic public health research has to be undertaken. The Committee regret the limited extent of the recommendations on public health research in the Acheson Report.

4.15 Particularly in relation to public health research the Committee stress the importance of the right to publish in maintaining academic independence and the standards of research. They were not entirely reassured by the Minister of Health's statement about the revision of DHSS research contracts in the light of Crown copyright (Q 2190). The DHSS and the NHRA should safeguard the right of academics to publish research commissioned from them, subject only to legitimate delay in order to safeguard intellectual property rights.

Use of Commercial Consultants by the NHS

4.16 Since the NHRA would be the principal means of developing the first-class management and operational research base which the NHS needs, the Committee believe that the NHRA should be the channel through which the NHS commissions research centrally from management consultants. In some cases it may be that properly managed academic contracts could be better value for money than contracts with commercial consultants. The use of commercial consultants should not be pursued as a short-term expedient in such a way as to restrict the growth of specialised centres of operational research expertise. It is moreover essential that, where commercial consultants are used, it is on the same basis, with the same research management, assessment and review, as other sources of research.

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[1] Public Health in England: The report of the Committee of Inquiry into the future development of the Public Health Function. January 1988, Cm 289, p 14, paras 4.5–6.

Relationship Between NHRA and Other Institutions

4.17 To be effective the NHRA would have to have close working relations with officials in the DHSS and within other NHS institutions. In addition the Committee expect that the Chairman of the NHRA, who would be appointed by the Secretary of State, would have direct access to the Secretary of State in the same way as the Chairmen of Regional Health Authorities. The NHRA would be subject to ministerial review, would be represented at departmental committees as necessary, and would be available for briefing ministers on the range of NHS activities within its competence.

4.18 The NHRA would provide an important new link between the NHS and the MRC. The MRC and the NHRA should between them represent interests across the whole range of medical research and service. The Committee recommend that there should be cross-representation of the NHRA and the MRC on each other in order to bridge any potential gap between their responsibilities and discourage overlap.

Annual Stocktaking

4.19 The Committee recommend that the annual stocktaking exercise should be continued and it should be expanded to include the NHRA, the medical research charities and where appropriate other research councils and the ABPI. The Committee leave how this is done to the DHSS and to the NHRA. They expect that the Chief Scientist of DHSS would continue to act as Chairman of the stocktaking meetings. Whatever else is done, the NHRA should be a party to all meetings. It may be that an annual series of limited meetings is more effective than one large and unwieldy one.

4.20 The Committee believe that this expanded stocktaking meeting, or series of meetings, should meet the need for a national forum on medical research recommended by some witnesses (see para 2.21). It would also provide the forum for discussion of priorities, gaps in research programmes and measures to fill those gaps—a function to which the Committee attach importance (see para 3.14).

4.21 Whatever form these meetings take a Handbook should be published along the lines of the DHSS Handbook of Research and Development at present produced by the Office of the Chief Scientist. The Handbook would publish the list of those subjects which had been identified as priority areas at the stocktaking, review progress in them, and list research undertaken.

Funding of the NHRA

4.22 The Committee believe that the funding for the NHRA should come from the DHSS Vote. The activities of the NHRA should not diminish the area of responsibility of the MRC enough to justify the return of the Rothschild funds (or any portion of them) to the DHSS for the purpose of funding the NHRA. Such a transfer should be contemplated only if failure by the MRC to fund clinical research led to a great increase in the funding of academic clinical research by the NHRA.

4.23 The Committee recommend that the NHRA take over the bulk of the budget of £8 million at present spent by the DHSS on health services research. The Office of the Chief Scientist would keep that element of its budget needed for research in support of ministerial policy, rather than NHS research. The NHRA would take on the management of most of the health service units and projects at present in that programme.

4.24 The NHRA's responsibility for the administration of NHS research would involve it taking over certain administrative tasks from other DHSS and NHS institutions. This should be recognised in the NHRA's resource allocation.

4.25 In addition the Committee believe that the NHRA should in part be funded out of Regional allocations. They envisage something along the lines of a subscription from RHAs to the NHRA. RHAs would make a mandatory contribution, to be set by the Secretary of State, but should be free to finance the NHRA to a greater extent if they desire, and to attach specific conditions to such funding if they wish. The Committee recommend this system as a means of introducing an element of accountability into the NHRA's funding and of associating the NHRA closely with the RHAs. The NHRA will be successful in so far as it proves useful to RHAs.

SIFT (Service Increment For Teaching) and 'Knock for Knock'

4.26 The NHS provides special funding for the teaching hospitals, through the SIFT system: indeed, the NHS contribution to a medical school through the SIFT contribution to the teaching hospital will normally be larger than the UGC contribution to the medical school.

4.27 The Committee understand that a review of the SIFT mechanism is under way. They welcome such a review, and consider that it is urgently needed. The Committee recommend that the review should examine how SIFT can be reformed to recognise explicitly the needs of research as well as of teaching. They also recommend that it investigate the practicability of paying SIFT funds, or a proportion of them, direct to the medical schools.

4.28 Because District Health Authorities fund the teaching hospitals, they often *de facto* set priorities in medical schools by decisions on how to deploy resources. These decisions will normally be made on the basis of service needs in the District. The Committee believe that SIFT should be allocated on the basis of the medical schools' contribution to the national training and research effort, as opposed to local service priorities. This is recognised implicitly at present: SIFT covers 75 per cent of the additional cost of the teaching hospital, while the RHA is expected to find the extra 25 per cent in recognition of the teaching hospital's function as a tertiary referral centre for its region. An explicit recognition of SIFT's research element should be introduced. Once this has been implemented SIFT would become SIFTR—Service Increment For Teaching and Research.

4.29 The SIFT budget supports teaching and the well-found base of a clinical department as well as research. The Committee's recommendation for SIFTR is not dependent on the existence of the NHRA, but they believe that the NHRA would with advantage administer it. Both the indivisibility of teaching and research and the need to allocate SIFT on the basis of national academic priority make this desirable. The NHRA should also calculate the rate at which SIFTR is payable. At present this is done on a simple *per capita* basis. It should be open for the NHRA to use a more sophisticated system, perhaps including an element of selectivity for important centres of clinical research.

4.30 Beyond this, the Committee are in favour of paying SIFT funds, or a proportion of them, direct to the medical schools, rather than to the teaching Districts. The Committee feel strongly that it is desirable to do so, since this will ensure that SIFT reflects the priorities of academic medicine rather than the priorities of individual districts. It will also in effect provide a means of protecting the extra funds needed for medical teaching and research in teaching hospitals from being eroded by service pressure. If the medical school needs extra facilities, it will have control of the funds to provide them. The District, for its part, will only have to provide a standard level of facilities throughout the hospital. Medical schools will simply pay for the services they need in hospitals. The Committee believe this will increase the accountability of researchers for the resources they use.[1]

4.31 There will be a further advantage of this transfer of SIFT to the medical schools, linked to the Committee's earlier endorsement of the dual support system, and retention of the UGC block grant for research (para 3.6). Under the UGC's arrangements for differential funding of research departments the academic manpower and resources for research in the best departments in universities should be protected (Q 2037). The Committee's proposals will match these arrangements with money for ensuring that the costs of care in clinical research are adequately covered. Both sorts of funding will be under the control of the medical school. The Committee believe this should provide for well-funded centres for clinical research.

4.32 In spite of the transfer of SIFT, it will never be practical for medical schools funded by the UGC and teaching hospitals funded by the NHS to account to each other for every moment of staff time. The Committee therefore accept that the 'knock for knock' principle, whereby costs incurred are on either side deemed to be offset by benefits received, will remain important. On the other hand, the recent years of spending restraint have put this system under severe strain, and medical research has consequently suffered. Academic resources have in effect been diverted into service. The Committee appreciate the pressures which have produced this situation, but they believe that it is not in the interests of health care. They recommend that the NHRA should have general responsibility for advising on the provision of facilities for clinical teaching and research in conjunction with the UGC, the MRC and medical research charities, and particularly where 'knock for knock' is under strain.

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[1] The Committee recognise that the transfer of SIFT from RHAs to the NHRA, and from teaching Districts to medical schools, would result in a reduction in the funds directly controlled by health authorities. It would also expose some deficiencies in the funding of service provision. Nevertheless they believe that the advantages to the health authorities would more than outweigh this. SIFT would continue to be spent in hospitals for the purpose of meeting the service costs of academic medicine: its transfer would not be a diversion of funds from the NHS to medical schools. This would also be a means to recognise the contribution of those non-teaching Districts which do not at present benefit from SIFT, but still undertake teaching for medical schools. Such Districts could apply to medical schools for reimbursement.

Regional Health Authorities (RHAs) and Locally Organised Research

4.33 In addition to strengthening the central awareness of research in the NHS, the Committee wish to encourage the research interest of those working in the NHS. Not only hospital clinicians but also GPs and those working in nursing, dentistry and disciplines allied to medicine should have the opportunity to identify research needs, and to undertake research themselves.

4.34 The Committee believe that the existing Locally Organised Research Scheme (LORS) can be made to serve this objective. The conditions which have to be met by the scheme are that:

(i) it should be organised on a regional basis so that it is accessible to local practitioners, who would still have available an adequate range of academic institutions;

(ii) there should be adequate administrative support to ensure that any projects pursued under the scheme are properly managed, that information about them is properly disseminated both within the area and nationally, and that, if a project justifies being given priority on a national scale, responsibility for support could be transferred to a national funding body such as the MRC, the NHRA or an appropriate private institution;

(iii) a good proportion of those working in the Health Service should have sufficient knowledge of scientific methods to be aware of the practical possibilities for, and limitations on, research projects.

4.35 The last depends on better basic scientific training. The Committee believe this should be provided through intercalated degrees (see para 7.11 below).

4.36 The Committee recommend that the LORS should be strengthened, in three ways:

(i) each Region should have a proper secretariat for administering the LORS through a Regional Research Office (RRO). This need not be elaborate, but there must be local officials whose principal tasks include the management and promotion of the Scheme;

(ii) each Region should be under a duty to report on the Scheme annually, for the purpose of the publication of a national review of LORS research; and

(iii) each Region should have within its allocation from the DHSS funds hypothecated to research.

4.37 The NHRA should have an overall auditing role in relation to LORS, to ensure the maintenance of standards and the effectiveness of expenditure. The NHRA will be responsible for disseminating results nationally and avoiding duplication. A review of LORS research should be published in the NHRA Research Handbook.

4.38 The NHRA should also encourage RHAs to cooperate with each other in fostering local centres of excellence for their own needs (such as the consortium at York University funded by the Trent, Yorkshire and Northern RHAs).

4.39 Another feature which must be preserved locally is the dissemination of research results to medical practitioners. Doctors remain largely responsible for their own clinical practice. GPs are still contractors who have individual responsibility for providing health care to their patients. There is a long professional tradition of GPs translating research into service which the Committee do not wish to disturb. The traditional and valuable routes for disseminating new discoveries are the learned journals—particularly the Lancet and the British Medical Journal—and the Royal Colleges, the British Medical Association, learned societies and libraries. The Committee were told that funding for libraries and for travel and attendance at meetings and seminars has been severely curtailed; they recommend that this policy should be reversed.

4.40 The Committee are aware of plans to experiment in the use of television networks and video recorders to transmit medical news and specialist clinical information to hospitals and GPs. This could be helpful in disseminating information. Its usefulness would be increased if the videos could be accompanied by tutored instruction. The Committee drew attention to the advantage of tutored video instruction in their report on Education and Training for New Technologies[1] and they now recommend that the NHS, perhaps with the assistance of the Open University, should investigate the use of tutored video instruction to improve the dissemination of research results and new practices.

Hypothecated RHA Research Funds

4.41 At present a notional element for research is included in the allocation to the RHAs. The Committee believe it is essential to hypothecate RHA funds to research. They recognise the arguments for not doing so. There is a tradition in British administration of not hypothecating funds: Regions are responsible for how they spend their own allocation, and should therefore be under as little central direction as possible. Hypothecation can moreover too easily lead to anomalies: situations can arise where there is a pressing need in one part of the system, and a budget lying unused elsewhere.

4.42 Nevertheless, the Committee believe that the countervailing arguments are now stronger. With strict cash limits on much of the NHS and the growth of patient demands, the needs of service will always be pressing. In just the same way that clinical researchers will always put their patients before their research, administrators will put day to day service before research. Yet research must be done. It requires a certain stability of funding and administration. Hypothecation would help to achieve this.

4.43 If service needs are pressing, this will increase the likelihood of hypothecated research funds being used for research to increase the cost-effectiveness and efficiency of service in the local area. This will provide a useful means of focussing the attention of administrators and researchers on their common needs within the Region.

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[1] 2nd Report (1984–5) HL 48, para 8.10.

CHAPTER 5 MEDICAL RESEARCH CHARITIES

5.1 The medical research charities play a special role in funding medical research in the United Kingdom. In no other area of scientific activity is there such a strong tradition of charitable funding. If it were not for the charities, medical research in the United Kingdom would be in a far more parlous state than it is now.

5.2 The Committee believe that it is important to recognise both the strengths and the weaknesses of charitable funding for research. Otherwise there is a danger either of leaving too much to the charities, or of undervaluing (and therefore perhaps duplicating) their contribution. For on any account the charities are a major and growing force: the Association of Medical Research Charities now estimates that its members will collectively fund more medical research than the MRC within the next year or two.

5.3 This fact must be put in context, however. The Imperial Cancer Research Fund is older than the MRC itself. The support of cancer research has always been left largely to the charities, as a matter of public policy. The cancer charities moreover represent a very considerable proportion of charitable research funding—perhaps as much as 45 per cent, to take the figures published by the AMRC. Another substantial proportion—just under a quarter of the total—is represented by the Wellcome Trust. The income of the Trust has approximately doubled over the last four years because of the public flotation of the Trust's major asset, Wellcome plc; this has fortuitously meant that the Trust has been able to deploy substantial increased resources as the resources of the MRC have contracted. The Trust has however committed a proportion of its increased income to new long-term programmes (Q 203).

5.4 The charities' incomes can moreover be uncertain. This is particularly true of those charities who collect money from the public (though it should be remembered, in the light of recent events, that the Wellcome Trust's income could be affected by the fluctuations of the Stock Market.) The sheer size of the cancer charities' fundraising organisations allows them to plan on having substantial resources from year to year, but the smaller charities have much less stability, and must therefore concentrate on short-term funding.

5.5 All the charities are circumscribed in what they do. They are each bound by their individual articles: it would for example be futile for anybody setting national priorities to recommend that the cancer charities direct their attention elsewhere, since the charities would almost certainly be precluded from doing so by their charters.

5.6 Those medical charities—normally disease or condition-orientated—which collect money from the public give a direct means of establishing public priorities in medical research on the basis of perceived need. People give towards solving the problems they worry about. The Committee noted the Government's endorsement of the public ''voting with its pocket'' in this way (QQ 2094, 2137). On the other hand, this is not a perfect way of setting research priorities, for several reasons. First, research funds only become available long after a problem has emerged, and caused a great deal of suffering. This is too late in the day. Secondly, it encourages disease- or condition-oriented research rather than generic research in fields such as molecular biology, immunology, preventive medicine, epidemiology and so forth. Thirdly, the public cannot be expected to make their donations with any awareness of overall research planning, or of the most promising scientific ideas. Fourthly, certain areas of medical research are simply not attractive enough to generate charitable funds in sufficient quantities: for example, the problems of ageing, or mental illness, or sexually-transmitted disease. Nevertheless, charities such as the Wellcome Trust whose resources are based on capital assets can make up for the lack of public charitable support in such areas. (The Wellcome Trust specifically set aside funds for mental health research for this reason (Q 188)). This is however a matter for such charities. They can agree to do it: they cannot be coerced.

5.7 In recent years the charities' funds have been growing, while MRC funding has been cut. This has meant that the charities have taken up a greater proportion of the burden of the national effort without any consultation about the extent to which they are going to have to do so.

5.8 It is worth noting that in the United States, contrary to popular misconceptions about the strength of private funding, the balance of public and charitable funding for medical research in practice reflects the principle of additionality—that the charities' efforts should be regarded as over and above the adequate national research effort funded by the Government (Appendix 5, paras. 5–6). In the United Kingdom, the far greater proportion of the national funding for medical research which the charities provide must be taken into account by the Government. But this has implications for the Government. The Committee recommend that the Government set up procedures (including the annual stocktaking) for formally consulting the medical research charities on the future of the medical research base and on any other issues which may affect them—such as the paying of overheads on research contracts in universities, for example. The charities should moreover be given adequate opportunity to plan for the level of Government funding on research, and indeed to make representations on funding where they believe this is in the national interest.

5.9 The willingness of the public to support medical research charities is an indication of their wish that money should be spent on medical research. The Committee do not find it acceptable that this should be a reason for reduced public sector funding. Nor, they feel certain, would those who support charities find it acceptable. They therefore recommend that growths in charitable spending should approximately be matched by public sector research spending through the MRC and the NHS.

Overheads for Research Funded by Charities in Universities

5.10 There are two kinds of overheads: specific research-related costs and general overheads towards the costs of the university.

5.11 Why should the charities not pay overheads? Some of course do: the Imperial Cancer Research Fund have concentrated their research effort in their own units partly at least because cuts in the public service, both in the NHS and in the UGC, have meant that that is the only way they could be sure of a properly equipped and staffed laboratory. In evidence the Wellcome Trust made the consequences of the charities having to pay overheads clear: there would be less research overall, and more charities might follow the ICRF in setting up independent research establishments (pp 380–1). This would not be in the national interest.

5.12 The Committee have already endorsed the principle that the maintenance of the research base is a public responsibility. They consider that the UGC (or UFC) should fund the universities sufficiently well to ensure that they do not have to charge the charities general overheads.

5.13 Charitable funding is both assuming a growing role in supporting research and, more importantly, being relied upon for that purpose. If charitable funds fell away, the taxpayer would have to make good the deficit. The Committee commend the American doctrine that charitable funds are really public funds administered privately (Appendix 5, para 14). The Committee believe there is little point in making the charities pay overheads for research in universities. It is all public money. Where overheads, and indeed the cost of standard consumables, would be most efficiently met out of general university funds—as they will in most cases—they should be so met; and researchers should not waste time applying to different charities for different consumables.

CHAPTER 6 PHARMACEUTICAL AND MEDICAL EQUIPMENT INDUSTRIES

PHARMACEUTICAL INDUSTRY

6.1 The pharmaceutical industry is one of the United Kingdom's successes. Its contribution to the balance of trade in 1986 was £850 million. Success in the pharmaceutical market largely depends on investment in research and development. The British pharmaceutical industry spent approximately £650 million on R&D in 1987 (P 18). Roughly half the volume of sales which support this research investment are made to the NHS, and half to private domestic customers and foreign customers. In 1986 the total NHS consumption of medicines was approximately £1,900 million, and United Kingdom exports of pharmaceuticals were over £1,500 million.

6.2 The pharmaceutical industry is in many ways exemplary in its investment in its own R&D (which is nearly 20% of turnover). The investment is based on a hard-headed appraisal of the market for pharmaceuticals, and an equally hard-headed appraisal of what research base the industry needs outside its own research establishments. Taken together this commitment to research makes the industry, in the ABPI's own words, "an integral part of the nation's medical research infrastructure. It both contributes to and is to a degree dependent on the other key elements, including university/MRC financed fundamental research and the clinical investigation conducted with the NHS" (P 18). The pharmaceutical industry is therefore vital to the national research effort, and the setting of national priorities.

6.3 The industry is in principle willing to do all its own applied research, or to commission it in universities at commercial rates (Q 142). The more innovative companies are willing to do strategic research, and this may involve long-term commitments; for instance, Merck, Sharp and Dohme have set up a unit to study the pharmacological properties of the brain and nervous system which the Deputy Director of the Wellcome Trust classed as pure research (Q 233). The Chairman of Merck, Sharp and Dohme told the Committee, on their visit to the United States, that he did not expect to see any return from that unit for seven or eight years: he would not even start to worry about a lack of promising leads before then. The Committee commend such farsightedness.

6.4 On the other hand, the pharmaceutical industry is an international one. World-leading companies carry out research and set up new units wherever they like. This decision is strongly influenced by the quality of the national research base, and it is significant that some of the well-found laboratories which the United Kingdom enjoyed until fairly recently are no longer so attractively equipped. Merck, Sharp and Dohme decided on their new unit in Britain five years ago; the suggestion was made to the Committee that they might have made a different decision today. The Committee find the implications of this worrying.

6.5 Pharmaceutical companies are not willing to fund a national research base directly. They would rather find another country where the research base is properly funded, where there are enough good scientists being trained through the university system, and enough good scientists working in the university system, for their needs. This is the harsh fact of the case. The Committee firmly believe that confidence in the maintenance of well-found laboratories must be restored; otherwise companies will take their research elsewhere, and Britain will lose a notably successful export industry.

6.6 The Committee believe that it is reasonable for the industry to look to the Government to support the essential research base. The ABPI's evidence on this point was cogent (QQ 129, 156–8). The Committee are further convinced that through the Pharmaceutical Price Regulation Scheme (PPRS) the United Kingdom has in the past had a sensible purchasing regime for the NHS which, in addition to meeting NHS needs, ensured that the pharmaceutical industry was healthy and made a real contribution to medical research. The Committee were however disturbed by the implication in the Minister of Health's evidence that the research and development costs which are reflected in the PPRS are now seen by the Government as in some sense constituting public support for medical research (Q 2148). This is misconceived. The NHS must buy drugs, and the prices pharmaceutical companies charge will reflect research and development costs. The fact that the PPRS is negotiated is a consequence of the scale of NHS spending. It is an advantage which the scale of that spending gives to the Government, not a benefit which the Government confers on the pharmaceutical industry.

6.7 The Committee have received a limited amount of evidence from the pharmaceutical industry that the research which the PPRS enables it to undertake is under threat because of the

Government's attempts to limit the cost of drugs in the NHS (Q 115). The Committee welcomed the Minister's reassurances on this point (Q 2148). The Committee nevertheless believe that certain steps are desirable in order to counter that threat, and to ensure that the United Kingdom continues to be as good a place as anywhere in the world for the pharmaceutical industry to operate.

Effective patent life

6.8 The Government should ensure that the patent protection available to the pharmaceutical industry in the United Kingdom in practice affords levels of protection similar to that afforded by the patent laws in major competing countries, both in Europe and in the United States and Japan. The Committee are aware that the Government is taking steps in the Copyright, Designs and Patents Bill to deal with the anomaly in the United Kingdom's present licence of right provisions which constrain effective patent life. The Government has not however tackled a further point on effective patent life: when periods for drug testing and registration are lengthened, this effectively reduces the period during which a product will be on the market with full patent protection (the period during which the company can recoup its investment). The Committee believe that it is important that the United Kingdom keeps in step internationally because otherwise companies will either take their research elsewhere, or else they will need to charge higher prices for new drugs to recoup their investment in a shorter time. Both of these eventualities would be bad for the United Kingdom. The Committee are aware that these matters may need European action. The Government should press our partners in Europe on the point if necessary.

Research commissioned by pharmaceutical companies in universities

6.9 The Committee encourage the commissioning of research in universities by industry, because it makes an important contribution to the national research effort. Like any arrangement, however, the terms have to be right on both sides. The Committee received a certain amount of evidence that there were difficulties: universities believed that it was dangerous for them to become too reliant on industrial contracts both because their intellectual integrity might be compromised and because industrial contracts, and particularly short-term contracts, would unbalance the work of a faculty or department (Q 1076). Industry on the other hand felt that they often did not get results from the research they paid for in universities: that researchers insisted too much on their own freedom without realistically considering the particular company's deadlines (P 159). Clinical trials in particular had to be closely controlled so as to ensure they were both rigorous and completed on time (QQ 923, 928).

6.10 The Committee have no doubt that both these difficulties are to an extent real, and that the remedy is one of give and take: academics should be more aware of industry's needs and requirements while industry must recognise that the value of research rests at least in part on its independence.

6.11 The criticisms may however also be symptoms of a deeper malaise. The sharp reduction in university funding seems to have created a buyer's market in university research. University departments may even have had to subsidise research contracts out of their UGC allocation (Q 1076).

6.12 The Committee believe that sensible levels of overheads should be negotiated for each contract between industry and a university. In the long term universities will only be able to develop good relations with industry (and vice versa) if contracts are accepted—or turned down—on a realistic appraisal of benefits on each side. It is a concomitant of this that costs for patient care, which the NHS would have had to bear in any case, are not charged to pharmaceutical companies (Q 923). Equally, industry cannot look for cut-price research in universities.

6.13 The Committee emphasise that the necessary conditions for universities to attract industrial research contracts include their having a sufficient UGC allocation to maintain their basic teaching, training and research facilities and that MRC funding is available for basic research. This is the Government's responsibility. It should not attempt to shift that responsibility onto industry. The Committee welcome the major commitments by companies to certain universities, but the real value of such commitments is not that it attracts private as against public funding for the research base. The company concerned will rightly expect a full return on its investment. The real value of such stable funding is that it allows the university to plan sensibly. This value will be negated if a university is covertly penalised in its public funding for success in attracting such private funding.

MEDICAL EQUIPMENT INDUSTRY

6.14 The Committee have already referred to the ACARD report on medical equipment[1]. The Committee do not believe that they can usefully add to that report, except to underline the gravity of it. The apparent inability of the British medical equipment industry to use the British domestic market as a base for developing internationally competitive equipment is deeply to be regretted. The establishment of the British Health Care Trade and Industry Confederation is to be welcomed if it gives the industry a stronger voice with the DHSS. The Committee further intend that the NHRA should be a means of helping the industry to identify research possibilities within the NHS, and the needs of the NHS which the industry might meet.

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[1] Medical Equipment: Cabinet Office: Advisory Council for Applied Research and Development, 1986, HMSO.

CHAPTER 7 MANPOWER FOR RESEARCH

7.1 Research rests on the availability of well-qualified and talented researchers. Policies to ensure that researchers and their supporting staff are available in the right fields are integral to the setting of priorities in medical research. Many witnesses fear that research workers are not being recruited and trained in the United Kingdom in sufficient numbers, and that career prospects are not attractive enough to keep researchers in the medical field in this country. The Committee are persuaded that this is the case. Poor pay and poor career prospects are both serious disincentives. It is not uncommon for a post-graduate research post to be advertised at a salary lower than would be paid to a typist in many other fields, and moreover such posts are normally in short-term contracts providing no career prospects whatever. Training grants are very low. These failings have to be remedied.

7 2 Medical researchers are not in it just for the money. Simply paying more will not on its own attract better people. The Committee stress that they believe recent academic pay settlements to have been fully justified, but insofar as those increases have not been fully covered by increases in UGC and Research Council funding, they have been paid for at the cost of the other facilities for medical research. In the case of pay settlements for clinical academics it has been particularly hard for universities to absorb these, or even plan for them, since the scales of pay are linked to those of the NHS. This difficulty has led to a delay each year in meeting such increases, which has in turn unnecessarily damaged researchers' morale. The delay in funding, and underfunding, should not be allowed to occur in future.

7.3 Serious though these matters are, the Committee are convinced that they are not the whole of the problem. The ability to pursue work in adequately funded laboratories, with sufficient technical support, is crucial to medical researchers. British emigres whom the Committee met in the United States were unanimous on the point: many would rather work in the United Kingdom but there were not the facilities here (Appendix 5, paras 40–1). Hence started the dangerous trend noted by the Royal Society in their recent report[1]: the total numbers of academics entering and leaving the United Kingdom may balance, but more of those leaving are going permanently while those coming to work in the United Kingdom are doing so as short-term visiting researchers. Valuable though the latter are in promoting international contacts, this is not equal traffic. What is more, the Committee believe there is a severe risk that further erosion of the research facilities of the United Kingdom will mean that the quality of visiting academics too will fall (Q 1677). That is a process through which British science will progressively be marginalised.

7.4 The Committee have been deeply impressed not only by the commitment of researchers but also by their realism. Researchers themselves have made the point that their career opportunities cannot consist of a secure tenured structure. Researchers sometimes burn out and need opportunities to transfer into clinical practice. What is needed is a career structure which offers a fair availability of research programmes and posts giving a good prospect that those who wish to remain in medical research and who continue to generate good research projects will be able to find posts and funding. In this sense the provision of adequate career prospects to attract medical researchers into the subject is bound up with the overall health of medical research in the United Kingdom.

7.5 One specific way to improve continuity and career prospects will be to increase the proportion of research grants going to programmes rather than projects. Both types of grant are needed but the Committee support the ABRC's emphasis on programme grants.[2] These are no substitute for adequate overall funding but they can alleviate the consequences of its lack and reduce the disproportionate time involved in researchers chasing grants to continue their work.

7.6 In the case of clinicians it is essential that there are routes by which clinical researchers can transfer to the clinical structure of the NHS at any stage in their career. This is a complex matter intimately bound up with NHS staffing policy, which has itself been the subject of intense scrutiny. The Committee do not make detailed recommendations, which could mean reopening the whole argument of 'Achieving A Balance'[3], although they acknowledge the doubts often expressed to them about the adequacy of the proposed arrangements for the career prospects of researchers.

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[1] 'The Migration of Scientists and Engineers to and from the UK', a report on the study of the Science and Engineering Policy Studies Unit of the Royal Society and the Fellowship of Engineering, 1987

[2] A Strategy for the Science Base, p 8.

[3] Hospital Medical Staffing: Achieving A Balance: A consultative document, issued on behalf of the UK Health Departments, the Joint Consultants Committee and Chairmen of Regional Health Authorities, July 1986.

7.7 However, the Committee believe that their recommended NHRA will provide the means of ensuring that the needs of research are considered when decisions on manpower policy within the NHS are taken, and will also provide the stimulus to ensure that specific problems are reviewed and resolved as they arise. There is a difficult balance to be struck. Conditions of service for NHS and academic clinicians should not be so different that the latter are induced to transfer to clinical practice—as many witnesses have suggested they are at present. At the same time, the NHS structure must be open enough for clinicians to pursue research and still be able to regain a place on the career ladder without penalty.

7.8 It is not only NHS policies which affect the career prospects of clinical researchers. Most rely on MRC studentships and fellowships for doctoral and post-doctoral training in research. The reduction in MRC funds for such studentships and fellowships is a real disincentive to research.

7.9 What is more, research training for clinical researchers has to be added to their undergraduate education, which is supervised by the General Medical Council (GMC), and their clinical training, which is supervised by the Joint Committee on Higher Medical Training (JCHMT) of the Royal Colleges. If clinicians are to qualify for the higher posts in the NHS, they must also satisfy the accreditation requirements of the Royal Colleges. A number of witnesses identified the length of training required for medical research as a possible disincentive—especially since rewards thereafter would probably be lower than in clinical practice. In evidence both the GMC and the Royal Colleges made it perfectly clear they recognised the problem, and were taking steps to deal with it (pp 118, 265).

7.10 The Committee particularly welcomed the letter from the President of the Royal College of Physicians of Edinburgh, newly-elected as Chairman of the JCHMT. He said that "agreement has been reached in principle for the establishment within the structure of the JCHMT of an *ad hoc* advisory committee. This will permit a far greater degree of flexibility in the provision of advice to young men in training because we propose that this committee will consider, on an *ad hominem* basis, the position of trainees who have followed an unusual pattern of training in a field for which there is no approved training programme" (p 265). The Committee believe that this *ad hoc* advisory committee can introduce just the sort of flexibility which is needed to ensure that clinicians may pursue research without damaging their later career in clinical practice.

Intercalated Degrees

7.11 Equally to be welcomed is the GMC's commitment to research. The Committee are at one with the 1980 Recommendations on Basic Medical Education in believing that "the development of attitudes appropriate to medicine" by students includes developing "an ability to recognise their obligation to contribute if they can to the progress of medicine and new knowledge, and to assess the reliability of evidence and the relevance of scientific knowledge, to reach conclusions by logical deduction or by experiment, and to evaluate critically methods and standards of medical practice" (p 118).

7.12 The GMC specifically endorses intercalated degrees as a means of pursuing these ends. The Committee strongly concur. An intercalated degree is not an adequate research training in itself, but it is an invaluable early introduction to scientific method. Students will be able to identify for themselves whether they have the aptitude and inclination to pursue research. There should also be an introduction to understanding research methods in the basic medical course.

7.13 The experience will not be wasted on those students who do not pursue research careers. Both the basic introduction and the intercalated degree will benefit the future implementation of research in service, because clinicians will be trained to weigh up the results of research for themselves, and to judge how to use these results in their own practice. Intercalated degrees should moreover foster precisely the awareness of research needs and possibilities which is needed if the strengthened LORS proposed by the Committee is to succeed.

7.14 The Committee therefore recommend that an intercalated honours degree should now be available for all medical students who opt for it, and that it should be funded by LEAs. They further envisage that the intercalated year should ultimately be standard for all medical students.

They recognise this may take some time to achieve. They also recognise that this recommendation conflicts with evidence complaining of the length of medical training. At present, however, such an extra year is either standard or available at a few universities, where it is funded automatically as an integral part of the course. If all students were to undertake it, it would not penalise would-be researchers by adding a year to their training alone.

7.15 The problem in recent years has been funding for intercalated degrees. Apart from spending constraints, the MRC has felt it should not fund intercalated degrees because the prime purpose of such degrees is training rather than research. The Committee therefore make the recommendation that funding of intercalated degrees should be provided by LEAs as a mandatory part of their funding for undergraduate degrees, of which intercalated degrees should be treated as a necessary part.

Non-Clinicians

7.16 The Committee are aware that much medical research depends on researchers who are not clinicians, and the proportion is growing. They have been disturbed to hear of acute shortages of post-doctoral scientists to fill posts in medical research in the United Kingdom (QQ 213–22). Scientists and technicians working in medical research need training and career prospects just as much as clinicians. The Committee's recommendation that programme funding should be emphasised rather than project funding should help provide more security.

7.17 Here again however the problem ultimately springs from a need to keep up a certain level of research activity across the whole spectrum of research, to achieve sufficient flexibility to attract the ablest scientists into research, and to offer researchers sufficient prospects of good posts to keep them in the field. Post-doctoral molecular biologists for instance are in great demand internationally. The Committee congratulate the Wellcome Trust and other bodies on the steps they have taken to provide each year for new doctoral and post-doctoral studentships and fellowships in the fields essential to medical research. The MRC must not ignore this need, however constrained their funds may be. Such studentships and fellowships may also be appropriately funded by other Research Councils—the SERC in the case of biotechnology, the ESRC in the case of the social science needed for public health and operational research.

7.18 Finally, there is a need to ensure an adequate number of technicians and support staff of all types. Years of low salaries, short-term contracts, and insecure prospects have made work in research laboratories relatively unattractive, while the laboratories themselves have often been run on inadequate staffs. The Committee expect the UGC, the Research Councils and the NHRA to ensure that the need for non-medical scientists and technicians is recognised and met. In addition the Committee recommend that the NHRA investigate whether the Public Health Laboratory Service could supply some laboratory facilities, posts and career opportunities for technicians supporting clinical research in the medical schools.

CHAPTER 8 LEVELS OF FUNDING FOR RESEARCH

8.1 The Committee have made every effort to restrict their recommendations to those changes which are achievable within present levels of public spending. They have sought ways in which research could be made more responsive to national health needs, and the morale of research workers could be restored, by organisational change. The overwhelming bulk of the evidence is however that levels of funding for the UGC, the MRC and other Research Councils, and for the NHS insofar as it impinges on medical research, should be increased. The Committee regard this as a matter largely outside their self-imposed terms of reference, but they feel impelled to agree that more spending on medical research is needed.

MODERNISATION AND RE-EQUIPMENT

8.2 Allied to their recommendation in paragraph 4.30 that some or all SIFT funds should be paid straight to medical schools, the Committee make one specific recommendation for increased public spending on modernisation and re-equipment. In common with the rest of the university system, the medical schools have been required by the UGC to be in balance by 1990-91, and to submit an academic plan (including financial estimates) in order to qualify for financial assistance towards the restructuring of departments (particularly towards the extra costs of premature retirement schemes). The Committee recommend that this process be complemented by a special allocation of £25 million a year for three years, starting in 1989-90, for the modernisation and re-equipment of medical research facilities in the United Kingdom (P 181). These funds, which universities would have to bid for, should be allocated on the advice of the UGC, the MRC and the NHRA.

8.3 The Committee make this recommendation in the belief that there is a special case for it. First, they seek to use a stimulus to medical research to bring research and health services closer together. Secondly, medical research is particularly apt for such investment at present, with new horizons being opened up by developments in molecular biology. Thirdly, the low morale which has become all too evident during the course of the Committee's enquiry could be to some extent reversed by this initiative. Fourthly, this re-equipment will help universities to remain competitive in the very demanding world market for pharmaceutical research and development. Finally, the Committee believe that, whatever solution is ultimately found to the funding of the NHS, some investment in its research facilities is in the national interest, particularly in the light of the general buoyancy of the economy.

BENEFACTIONS

8.4 The Committee make a final recommendation on private spending, based on the economic successes of the past few years. In the United States there has long been a tradition of major benefaction by individuals (see Appendix 5, paras 13–18). It is an attractive concomitant of the enterprise culture. There have been great benefactions in the United Kingdom too, of which the Wellcome Trust is perhaps the most notable example. Medical research has benefitted enormously from one man's legacy. The growing generosity of the general public who give large sums to medical charities every year makes an excellent contribution. But the strength of private foundations is that—provided their articles are widely-drawn—they can fill gaps where the public have not yet perceived a need, or where the need is too diffuse to attract sufficient public interest. Many individuals have done well in the 1980s in Britain. Tax rates have encouraged personal wealth. The Committee urge that some of this new wealth should be donated to medical research. This would reflect honour on individual donors, would be a means of bestowing disproportionate benefits on the country and indeed the world, and would in this way maintain the twin traditions of medical excellence and private generosity.

CHAPTER 9 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

9.1 The Committee's recommendations outline how decisions on priorities in medical research should be taken. They advocate a science-led approach in circumstances which allow research to thrive. This demands well-found laboratories, good medical schools and a strongly motivated and adequately supported body of researchers. They also recommend better recognition of the service needs of the NHS. The onus here is mainly on the NHS itself, to articulate its needs and to assist in meeting them. These two approaches—science-led research and service need—then have to be welded together, so that service needs stimulate research and promising ideas flourish. Provided that successful research is then carried through into practice, these measures should have an important impact on the efficiency and cost-effectiveness of the NHS, and of national research spending, in line with the Government's overall policy.

9.2 The Committee do not consider themselves competent to recommend specific medical priorities, nor would this be appropriate in view of what has just been said. Such decisions rest principally with the research community and the managers of the NHS. But they do recommend more effective provision for public health research and operational research by the NHS and due attention to clinical medicine in the MRC. For its part, the DHSS has its own research needs to meet in support of Ministers; it has a crucial role in respect of NHS funding; and it is best placed to bring all the funding bodies together to pursue the common interest of national health. But the Committee urge the DHSS to recognise that the assumption of research responsibility by the NHS, as well as by the research community, is the right way forward.

Medical research

9.3 The United Kingdom should maintain the research capability to sustain first-class health services (para 1.1).

9.4 Morale among medical researchers is low because of the impression, right or wrong, that the Government believes that research does not matter; if this impression is not corrected it will have disastrous effects (paras 3.1–2).

Establishing priorities

9.5 Any formal mechanism for directing national priorities would almost certainly be inefficient and could stifle research. The Committee prefer to rely on pluralistic funding and administration of research in which good ideas compete for support (para 3.5).

9.6 Both of the present dual support systems for medical research are sound in principle (para 3.6).

9.7 The MRC is the right vehicle for funding basic and academic clinical research (para 3.6).

9.8 The UGC (and its successor the UFC) should retain responsibility for funding adequately the academic infrastructure for medical research (para 3.6).

9.9 Medical research and medical education should be inseparable. Medical research should continue to be carried out for the most part in, or in association with, medical schools and universities rather than in national centres (para 3.7).

9.10 Science-led research should be dominant. The main focus of public policy in medical research should be the creation of a strong infrastructure for research and the supply of a strongly motivated and well-trained research community (para 3.11–12).

9.11 As priorities change, research leaders should be encouraged to move to the new areas in order to build up scientific strength and new research teams (para 3.12).

9.12 Some setting of priorities and some emphasis on problem-led research is essential. There appears to be no effective means of setting priorities. Filling gaps in national research effort is not a responsibility which governments should leave to charity (para 3.15).

9.13 The MRC should take pains to strengthen the contribution of clinicians to its work (para 3.17).

9.14 The funding of applied research in medicine is unsatisfactory, and the key lies in the NHS (para 3.18).

National Health Service

9.15 The NHS is inextricably involved with medical research, yet the administrative remoteness of medical research from the NHS is a source of weakness to both sides. No research system can function efficiently when the principal customer for research (the NHS) has so small a direct input into the initiation of research programmes (paras 3.19–22).

9.16 The DHSS and the NHS both require research programmes but these will be different in scale and kind. There is a clear distinction between the needs of ministerial policy and of NHS research (paras 3.4, 3.24).

9.17 The NHS should be brought into the mainstream of medical research. It should articulate its research needs; it should assist in meeting those needs; and it should ensure that the fruits of research are systematically transferred into service (para 4.1).

9.18 For this purpose a National Health Research Authority (NHRA) should be created within the NHS. Its functions are set out in para 4.6 (paras 4.4–7).

9.19 If the structure of the NHS were radically altered, there would remain a need for a central agency to carry out the functions which the Committee propose for the NHRA (para 4.5).

9.20 The NHRA should take on a primary role in funding public health and operational research and a part role (shared with the MRC) in funding clinical research, but should not pay for basic research. It should complement, not displace, the MRC and other funding bodies (paras 4.2, 4.8).

9.21 There should be cross-representation of the NHRA and MRC on each other (para 4.18).

9.22 The lack of overt reference to primary care research in the White Paper on primary care is to be regretted. The shift towards primary care in Government policy should be underpinned by research programmes. The NHRA should play a part in building up the research base in primary care and general practice, perhaps in cooperation with Family Practitioner Committees (para 4.9).

9.23 The NHRA should have a responsibility for overseeing all the needs and opportunities for research in the NHS, including nursing, midwifery and health visiting, dentistry and disciplines allied to medicine, and some of these disciplines should be represented among its membership (para 4.11).

9.24 The main funding for the NHRA should come from the DHSS Vote, but part of the cost should be financed by subscriptions from the RHAs (paras 4.22–25).

Public health and operational research

9.25 Public health research and operational research have been inadequately supported. It is especially serious that so large an organisation as the NHS devotes so small a part of its budget to seeking how to improve its own operations. Since public health and operational research will repay investment, spending should be markedly increased. The NHRA should foster at least three centres for these disciplines (paras 4.12–14).

9.26 DHSS and NHRA should safeguard the right of academics to publish research commissioned from them (para 4.15).

9.27 The use of commercial consultants should not be pursued in such a way as to restrict the growth of specialised centres of operational research expertise (para 4.16).

Annual stocktaking

9.28 The annual stocktaking between MRC and the Health Departments should be expanded to include the NHRA, the medical research charities and where appropriate the other Research Councils and the ABPI. The Chief Scientist of DHSS should take the Chair. The stocktaking should provide a forum for discussion of priorities, gaps in research programmes and measures to fill those gaps. A Handbook of Research and Development should publish the priority areas identified, review progress in them and list research undertaken (paras 4.19–21).

SIFT and 'knock for knock'

9.29 The current review of SIFT is welcomed. The review should examine how SIFT can be reformed to recognise explicitly the needs of research as well as teaching, and the practicability of paying some or all SIFT funds direct to the medical schools. The NHRA could with advantage administer and calculate the reformed SIFT (paras 4.26–31).

9.30 The NHRA should advise on the provision of facilities for clinical teaching and research, particularly where the 'knock for knock' system is under strain (para 4.32).

Local research

9.31 To encourage the research interest of those working in the NHS the Locally Organised Research Scheme (LORS) should be developed (paras 4.33–37).

9.32 RHAs should cooperate in fostering local centres of excellence (para 4.38).

9.33 A proportion of RHA funds should be hypothecated to research (paras 4.41–43).

Dissemination

9.34 It is regrettable that funding for libraries and for travel and attendance at meetings and seminars of professional bodies and learned societies has been severely curtailed, so hindering the dissemination of research results to medical practitioners. This policy should be reversed (para 4.39).

9.35 The NHS should investigate the use of tutored video instruction to improve the dissemination of research results and new practices (para 4.40).

Medical research charities

9.36 Medical charities give a direct means of establishing public priorities in research on the basis of perceived need, though this method of establishing priorities is not perfect (para 5.6).

9.37 The Government should consult the charities on the future and funding of the medical research base (para 5.8).

9.38 Growth in charitable spending should approximately be matched by public sector research spending through the MRC and the NHS (para 5.9).

9.39 The UGC should pay the general overheads for research funded by the charities in universities (paras 5.10–13).

Pharmaceutical industry

9.40 The pharmaceutical industry should be able to look to the Government to support the essential research base. It is in the national interest to ensure that the United Kingdom is as good a place as anywhere for the pharmaceutical industry to operate (paras 6.2–7).

9.41 Effective patent life for pharmaceutical products should be protected (para 6.8).

9.42 Industry should pay overheads for research contracts in universities but should not be charged for patient care in the NHS (para 6.12).

Medical equipment industry

9.43 The NHRA should help the medical equipment industry to identify research possibilities within the NHS and the needs of the NHS (para 6.14).

Research manpower and training

9.44 The delay in funding, and the underfunding, of pay awards to clinical academics has damaged morale and the research base. This should not be allowed to occur in future (paras 7.1–2).

9.45 Adequate career prospects for medical research teams, that is to say a fair availability of research programmes and posts, are required (paras 7.3–4).

9.46 The proportion of research grants given to programmes rather than projects should be raised, though both types of grant are needed (para 7.5).

9.47 The NHRA should ensure that the needs of research are considered when decisions on NHS manpower policy are taken (para 7.7).

9.48 The proposals of the Joint Committee on Higher Medical Training on flexibility in training, and the commitment of the General Medical Council to research, are welcomed (paras 7.10–11).

9.49 An intercalated year should now be available for all medical students who opt for it. It should be funded by local education authorities. Ultimately the intercalated year should be standard for all medical students. An introduction to understanding research methods should be included in the basic medical course (paras 7.12–15).

9.50 The NHRA, the Research Councils and the UGC have to ensure that the need for non-medical scientists and technicians is recognised and met. The Public Health Laboratory Service might supply some laboratory facilities, posts and career opportunities for technicians supporting clinical research in the medical schools (paras 7.16–18).

Funding of medical research

9.51 More spending on medical research is needed (para 8.1).

9.52 A special allocation of around £25 million a year for three years should be made for the modernisation and re-equipment of medical research facilities in the United Kingdom (paras 8.2–3).

9.53 Wealthy individuals should be encouraged to support research by benefactions which maintain the twin traditions of medical excellence and private generosity (para 8.4).

APPENDIX 1

Sub-Committee II (Medical Research)

The members of the Sub-Committee which conducted this enquiry were:

L. Adrian
L. Erroll of Hale
L. Flowers
L. Hunter of Newington
L. Kearton
B. Lockwood
B. McFarlane of Llandaff
L. Nelson of Stafford (Chairman)
L. Perry of Walton
L. Rea
L. Sherfield
L. Smith
L. Taylor of Blackburn
B. Warnock

APPENDIX 2

List of Witnesses

The following witnesses gave evidence. Those marked * gave oral evidence.

Dr. A.A.J. Adgey, Regional Medical Cardiology Centre, Belfast
Professor A.G. Alexander, University College and Middlesex School of Medicine
Professor H. Allred, London Hospital Medical College
Dr. Sue Armitage, South Glamorgan Health Authority
Arthritis and Rheumatism Council
Dr. M. Ashley-Miller, Nuffield Provincial Hospitals Trust
*Association of the British Pharmaceutical Industry
Association of Anaesthetists of Great Britain and Ireland
Association of Clinical Biochemists
Association of Clinical Professors and Heads of Departments of Paediatrics
*Association of Clinical Professors of Medicine
*Association of Medical Research Charities
Association of Professors of Anaesthesia
Association of Professors of Dentistry
Association of Researchers in Medicine and Science Ltd
*Association of University Teachers of General Practice
AXrEM, EMTA and Gambica
Backpain Association
Professor Denis Bellamy, University College, Cardiff
Biochemical Society
Bloomsbury Health Authority, Nursing Research Committee and Chief Nursing Adviser's Department
Sir Christopher Booth, Clinical Research Centre
British Anaesthetic and Respiratory Equipment Manufacturers Association (Barema)
British Association of Pharmaceutical Physicians
British College of Optometrists
British Dental Association, Central Committee for University Dental Teachers and Research Workers
British Diabetic Association
British Digestive Foundation
British Heart Foundation
British Institute of Radiology
British Laboratory Ware Association
British Leprosy Relief Association (LEPRA)
British Lung Foundation
British Medical Association, Medical Academic Staff Committee
British Society for Dental Research
British Thoracic Society
British Toxicology Society
BUPA Medical Research and Development Limited
Cancer Research Campaign
Dr. Ann Cartwright, Institute for Social Studies in Medical Care
Chest, Heart and Stroke Association, London
Ciba Foundation
City and Hackney Health Authority, St. Bartholomew's School of Nursing
Professor C.G. Clark, Department of Surgery, School of Medicine, University College London
College of Health
*Committee of Vice-Chancellors and Principals
Dr. J.E. Cotes, University of Newcastle Upon Tyne
Council of Science and Technology Institutes
*Professor R. Crow, Nursing Practices Research Unit, University of Jersey
Professor M.E.J. Curzon, University of Leeds
Ms. Veronica P. Cuthbert
Cystic Fibrosis Research Trust
Professor J.A. Davis, University of Cambridge Clinical School, Department of Paediatrics
Department of Education and Science
*Department of Health and Social Security
Department of Health and Social Security, Northern Ireland

Department of Trade and Industry
Dr. Roger Detels, University of California, Los Angeles
Development Trust for the Young Disabled and Research for the Disabled
*Professor R. Duckworth, Dean, The London Hospital Medical College
Dr. Gordon N. Dutton, Tennent Institute of Ophthalmology, University of Glasgow
East Anglian Regional Health Authority
Economic and Social Research Council
English National Board for Nursing Midwifery and Health Visiting
Faculty of Dental Surgery of the Royal College of Surgeons of England
Dr John V. Farman, Consultant in Anaesthesia and Intensive Care, Addenbrooke's Hospital, Cambridge
Fellowship of Engineering
*Professor Sir Patrick Forrest, University of Edinburgh
Foundation for Age Research
Foundation for the Study of Infant Deaths
Mr J.G. Fraser
Professor Paul Freeling, Special Advisory Committee in General Practice, University of London
*Mr I. Gainsford, Dean, King's College School of Medicine and Dentistry
General Medical Council
*Professor P.D. Griffiths, Dean, Faculty of Medicine and Dentistry, University of Dundee
Professor J.M. Harrington, Institute of Occupational Health
*Heads of Academic Departments Group (Social and Community Medicine)
Health Education Authority
Health and Safety Executive
Health Visitors' Association
Professor M.J.R. Healy, London School of Hygiene and Tropical Medicine
Mr Roger Hill
Mr. S.J. Holder, Director of Nurse Education, St. Mary's Hospital
Dr. Robin Holliday, Division of Genetics, National Institute for Medical Research
Mr. D. Horrobin, Efamol Ltd.
Professor S.L. Howell, King's College London
*Dr. D.M. Humphreys MB ChB
*Imperial Cancer Research Fund
Imperial Chemicals Industry (ICI)
Institute of Biology
Institute of Cancer Research
Institute of Hospital Engineering
Institute of Medical Laboratory Sciences
Institute of Physical Sciences in Medicine
Professor Bryan Jennett, Department of Neurosurgery, University of Glasgow
*Professor A.G. Johnson, University of Sheffield
*King Edward's Hospital Fund for London
M.A. Launer, Consultant Psychiatrist, Burnley, Pendle and Rossendale Health Authority
*Dr Claude Lenfant, National Heart, Lung and Blood Institute, USA
Leukaemia Research Fund
Professor Levy, Institute of Psychiatry
Dr. Brandon Lush, Friends of Age Research (Bristol)
*Professor Alan Maynard, Centre for Health Economics, University of York
Medical Care Research Unit, Department of Community Medicine, University of Sheffield
*Medical Research Council
*Medical Research Society (with the Association of Clinical Professors of Medicine)
Professor K. Mellanby
Mersey Regional Health Authority
Ms Bernadette Modell, Department of Obstetrics and Gynaecology, University College and Middlesex School of Medicine
Midwives Information and Resource Service (M.I.D.I.R.S)
Professor R.A.B. Mollan, Department of Orthopaedic Surgery, The Queen's University of Belfast
Professor D.C. Morrell, United Medical and Dental Schools of Guy's and St. Thomas's Hospitals
*MRC/ESRC Social and Applied Psychology Unit, University of Sheffield
MRC Physiological Systems and Disorders Board Grants Committee A

Multiple Sclerosis Society of Great Britain and Northern Ireland
Muscular Dystrophy Group of Great Britain and Northern Ireland
National Association of Health Authorities
National Society for Epilepsy
National Society for Mentally Handicapped People in Residential Care (RESCARE)
Natural Environment Research Council
Professor M.N. Naylor, United Medical and Dental Schools of Guy's and St. Thomas's Hospitals
Professor Denis Noble FRS
North East Thames Regional Health Authority
North West Thames Regional Health Authority
North Western Regional Health Authority
Dr. F. Nour-Eldin
Nuffield Foundation
Occupational Therapists and Physiotherapists Boards
*Professor D. Ogston, Dean of the Medical School, University of Aberdeen
Oxford Regional Health Authority
Dr. Jan Pahl and Dr. Helen Mair, Medway Health Authority
Paterson Institute for Cancer Research
Professor M.E. Pembrey, Mothercare Department of Paediatric Genetics, Institute of Child Health
Professor J.R. Perrin and Mr. R.G. Bevan, University of Exeter
Pharmaceutical Society of Great Britain
Physiological Society
Professor R.G. Priest, St. Mary's Hospital Medical School
Public Health Laboratory Service
Rehabilitation and Medical Research Trust
Professor M.J. Rennie, Department of Physiology, University of Dundee
Research Council for Complementary Medicine
Professor Osmund Reynolds, Neonatal Unit of University College Hospital
*Professor J. Richmond, University of Sheffield
Colonel A.C. Roberts, Pro-Chancellor of the University of Leeds
Professor A.H.R. Rowe, Professor of Conservatory Dental Surgery, Guy's Hospital
Royal College of General Practitioners
Royal College of Midwives Trust
Royal College of Nursing of the United Kingdom
Royal College of Obstetricians and Gynaecologists
Royal College of Pathologists
Royal College of Physicians
*Royal College of Physicians of Edinburgh
*Royal College of Physicians and Surgeons of Glasgow
Royal College of Psychiatrists
*Royal College of Surgeons of Edinburgh
*Royal College of Surgeons of England, with the Hunterian Institute
Royal National Institute for the Blind
Royal Society of Health
Royal Society of Tropical Medicine and Hygiene
Science and Engineering Research Council (SERC)
Professor J.S. Scott, Dean of Faculty of Medicine, University of Leeds
*Scottish Home and Health Department
Professor S.J.G. Semple, University College and Middlesex School of Medicine
Mr. B.T. Simpson
*Sir Geoffrey Slaney
Professor R.M.S. Smellie, Institute of Biochemistry, University of Glasgow
Society of Occupational Medicine
Society for Social Medicine
South East Thames Regional Health Authority
South West Thames Regional Health Authority
South Western Regional Health Authority
Spastics Society
E.R. Squibb and Sons Limited
Standing Conference of National and University Libraries
*Mr. Peter Styles MBE, British Health-Care Trade and Industry Confederation (BHTIC)

Sunderland Polytechnic, Faculty of Pharmaceutical Sciences
*Surgical Research Society
*Professor George Teeling-Smith, Office of Health Economics
*Trent Regional Health Authority
University of Edinburgh, Department of Nursing Studies
*University of Edinburgh, Faculty of Medicine
*University of Edinburgh, Nursing Research Unit
University of Exeter, Postgraduate Medical School
*University of Glasgow, Faculty of Medicine
*University Grants Committee
University Hospitals Association (England and Wales)
University of Liverpool, Faculty of Medicine
University of Liverpool, School of Dental Surgery
University of London, British Postgraduate Medical Federation
University of London, Charing Cross and Westminster Medical School
University of London, City and East London Confederation
University of London, Dental Schools
University of London, Joint Academic Department of Child Health
University of London, Joint Medical Advisory Committee
University of London, King's College, Nursing Research Unit
University of London, London School of Hygiene and Tropical Medicine
University of London, Royal Postgraduate Medical School
University of London, St. Mary's Hospital Medical School
University of London, School of Pharmacy
University of London, Special Advisory Committee on Nursing Studies
University of London, The London Hospital Medical College
University of London, Thomas Coram Research Unit, Institute of Education
University of London, University College and Middlesex School of Medicine
University of Manchester, Department of Pharmacy
University of Manchester, School of Biological Sciences
University of Newcastle upon Tyne, Department of Child Health
University of Southampton, Faculty of Medicine
University of Strathclyde, Department of Physiology and Pharmacology
University of Wales, College of Medicine, Dental School
University of Wales, College of Medicine, Department of General Practice
*University of Warwick, Nursing Policy Studies Centre
Upjohn Limited
Richard Wakeford, Cambridge University School of Clinical Medicine
Professor P.D. Wall, University College London
Wandsworth Health Authority, St. George's District School of Nursing
*Professor Sir David Weatherall FRS, Department of Clinical Medicine, University of Oxford
*The Wellcome Trust
The Wellington Foundation
Professor P.N.T. Wells, Bristol General Hospital
Welsh Office
Welsh Scheme for the Development of Health and Social Research
Wessex Regional Health Authority
West Midlands Regional Health Authority
West Midlands Regional Health Authority, Hospital Infection Research Laboratory
Professor G.K. Wilcock, Department of Care of the Elderly, University of Bristol
*Professor Alan Williams, Department of Economics, University of York
*Professor B.T. Williams, University of Sheffield
Wyeth Research (U.K.) Ltd
Yorkshire Regional Health Authority

APPENDIX 3

Letter of Invitation to Witnesses

The following letter was sent to invite evidence from witnesses:

The Select Committee on Science and Technology have set up a Sub-Committee under the chairmanship of Lord Nelson of Stafford *to consider priorities in medical research, with particular reference to the needs of the National Health Service.*

The Sub-Committee stress that their enquiry is restricted to priorities in medical research. However, while their terms of reference refer in particular to the needs of the National Health Service, the Sub-Committee welcome evidence on research concerned with any aspect of the health of the nation. They intend their enquiry to cover all areas of research, not only basic and clinical research, but also research in other sciences with a bearing on medical research, health service research, and research and development in the pharmaceutical and medical equipment industries.

The Sub-Committee ask that any person or institution submitting evidence describe their involvement in medical research, and give an outline of their own programmes and priorities if they either fund or carry out research.

Thereafter the Sub-Committee welcome evidence on nine specific questions.

(a) How are priorities for medical research set? How do these reflect the particular needs of the National Health Service, or more generally the health needs of the nation?

(b) Is the present balance between different branches of research right? Assuming that resources are limited, what programmes might be cut back, in order to allow those which should be given a higher priority to expand? What programmes need higher priority? Would priorities change in the light of increased resources?

(c) Are priorities in medical research adapting to changing incidences of disease, changing population structures and new technology?

(d) How are priorities in medical research influenced by the institutions through which research is funded? How does the balance between public, commercial and charitable funding of research affect the setting of priorities by the different institutions involved?

(e) Are the results of research adequately disseminated?

(f) How is unnecessary duplication of research effort avoided?

(g) Is research reflected as it should be in actual improvements in patient care or health education? If not, why not?

(h) What changes in priorities in the training of medical researchers are needed?

(i) Should any specific changes in organisation or funding be made in order to increase the quality, quantity or application of research?

APPENDIX 4

List of Abbreviations

ABPI	Association of the British Pharmaceutical Industry
ABRC	Advisory Board for the Research Councils
AFRC	Agricultural and Food Research Council
AMRC	Association of Medical Research Charities
BMA	British Medical Association
CVCP	Committee of Vice-Chancellors and Principals
DES	Department of Education and Science
DHA	District Health Authority
DHHS	Department of Health and Human Services (USA)
DHSS	Department of Health and Social Security
DTI	Department of Trade and Industry
ESRC	Economic and Social Research Council
GDP	Gross Domestic Product
GMC	General Medical Council
HEA	Health Education Authority
HHMI	Howard Hughes Medical Institute (USA)
HMO	Health Maintenance Organisation
HSE	Health and Safety Executive
ICI	Imperial Chemical Industries
ICRF	Imperial Cancer Research Fund
JPAC	Joint Planning Advisory Committee (on NHS manpower)
LORS	Locally Organised Research Scheme
MRC	Medical Research Council
NERC	Natural Environment Research Council
NHRA	National Health Research Authority (proposed by the Committee)
NHS	National Health Service
NHSTA	National Health Service Training Authority
NIH	National Institutes of Health (USA)
OMB	Office of Management of Budget (USA)
PPRS	Pharmaceutical Price Regulation Scheme
RAWP	Resource Allocation Working Party
RHA	Regional Health Authority
SERC	Science and Engineering Research Council
SHHD	Scottish Home and Health Department
SIFT	Service Increment For Teaching
UCLA	University of California at Los Angeles
UCSF	University of California at San Francisco
UFC	University Funding Council (successor body to UGC)
UGC	University Grants Committee

APPENDIX 5

Visit to the United States of America

INTRODUCTION

1. The visit to the United States in September 1987 gave the Committee an opportunity to learn about the organisation of research both nationally and within universities, and how research priorities are set; and to gauge how far medical research is international, and to what extent the United Kingdom needs to maintain an independent research capacity. In addition, the Committee had the advantage of hearing Dr. Claude Lenfant in evidence (PP 304–11), and of receiving a paper on AIDS from Roger Detels (pp 95–7).

2. The Committee's programme began in San Francisco, with meetings involving researchers from the University of California at San Francisco (UCSF), and the School of Public Health at Berkeley—both part of the State University of California. A day was spent at Stanford, a private university with a strong medical research tradition. The Committee then went to Los Angeles, where their hosts were the University of California at Los Angeles (UCLA). Over two days in Los Angeles they visited the Charles R Drew University of Medicine and Science (Drew), a new medical school set up specifically to tackle the health problems of the underprivileged black and hispanic population in the Watts area of the city, and the Rand Corporation, a non-profit making research organisation originally set up to undertake defence research but now with a substantial department involved in public health research. In addition the Committee had meetings in the School of Public Health of UCLA where they also met members of the UCLA School of Medicine and senior faculty members from the University of Southern California (USC), the major private institution in the area.

3. The Committee spent a day at the National Institutes of Health (NIH) at Bethesda, Maryland, the major federal medical research establishment, which also fulfils parallel functions to those of the MRC in Britain, in administering federal research grants. In Washington DC the Committee had meetings with officials of the Department of Health and Human Services (DHHS), with the Office of Management and Budget (OMB), and with officers of the Institute of Medicine (a national advisory and research institution which has no parallel in Britain) and representatives of major research industries and private research foundations. Finally, the Committee visited two more major research centres: Johns Hopkins University in Baltimore and, in Boston, Harvard Medical School, Massachusetts Institute of Technology, Tufts University Medical School and Boston University.

BACKGROUND

4. From the start the Committee found that many of their preconceptions of the differences between conditions in the United States and the United Kingdom were wrong. The two systems have more in common than might be expected. This suggests that the necessary conditions for, and problems with, medical research may be the same internationally. It is less a question of a choice of systems, more a question of recognising the limitations within which any system must operate.

PUBLIC FUNDING

5. The Committee went to America believing that the United States' pre-eminence in medical research was the result of massive private and industrial support. They quickly learnt better. The vast majority of funding for medical research comes from federal sources, notably NIH. 90 per cent of the UCSF Cardiovascular Research Institute's total budget of $17 million comes from NIH, for example; and most institutions visited by the Committee quoted figures of between 75 and 90 per cent for the NIH support they received.

6. The importance of NIH funding can hardly be over-estimated. By supporting the bulk of those research projects which are established as important and fruitful, it frees other resources—whether universities' own, or those of charitable foundations—to be essential venture funding for research and training: that is, resources flexible and generous enough to take risks on young researchers and new lines of enquiry which, if they prove themselves, will be taken on by NIH in their turn.

7. The similarity between the level of United Kingdom public expenditure on health, and that of the United States, is strikingly greater than might be expected. The United Kingdom spends perhaps 6 per cent of GDP on health, almost all of it public spending on the NHS. The United

States spends, in total, about 11 per cent of GDP on health. Of this, 40 per cent is public spending—notably on the Medicare and Medicaid insurance schemes (for the elderly and the poor respectively) and the Veterans' Administration. In addition, substantial tax concessions are given to companies providing insurance schemes for their employees. These concessions represent an additional hidden subsidy of perhaps 5 per cent of total health spending (over $23 billion). This pushes the proportion of public spending on health to something close to 5 per cent of GDP. An additional 6 per cent of GDP is then spent privately on health services in the United States.

COMPARATIVE HEALTH STATUS OF UNITED STATES AND UNITED KINGDOM

8. Yet, even though the United States spends almost twice as much as the United Kingdom as a proportion of GDP and more than twice as much per head, by at least one significant public health indicator—life expectancy—the general health of the two nations is about the same. Nor can the United States' poor showing in relation to its vastly higher expenditure be explained by higher rates of disease among its underprivileged communities. The connection between health spending, and particularly research spending, and the health status of the population is a complex question, and one which is not yet understood. It is important not to underestimate the contribution which medical research makes to the quality of life, particularly of those suffering from chronic and terminal conditions, even though this may be hard to measure. The similarities in health status between the United States and the United Kingdom are moreover based on strong links between the medical professions, and particularly medical researchers, of the two countries in the past. If the United Kingdom's support for medical research declined sharply, the effects of this might take some time to show in comparative health status indicators.

9. It is important to note the growing differences between the health systems of the two nations. The United States does not have the relatively homogeneous care provided by the NHS, with its mechanisms for controlling medical recruitment and deployment of resources. There are wide variations between the availability and the quality of service throughout America, both between regions and between hospitals. The NHS is moreover increasingly dependent on its system of primary care based on general practitioners. This has no real parallel in the United States. The economic pressures generated by fee-based service have an important influence on the pattern of services in the United States. These pressures, and in particular the sharply rising costs of health services, are increasingly provoking the development of new mechanisms for delivery (and paying for) health services. Foremost among these are the Health Maintenance Organisations (HMOs). Even these have irregularities built in, however: for instance, economic considerations lead some HMOs to recruit only healthy members.

POLITICAL IMPORTANCE OF MEDICAL RESEARCH

10. The greater proportion of GDP spent on health does seem to reflect a greater active public concern in the United States than in the United Kingdom. American politicians believe there are votes in biomedical research. Influential lobbies support this. The budget of NIH has been maintained at a very high level—$6.7 billion in fiscal year 1987—by direct Congressional intervention, during the appropriation process, to increase the amounts allocated in the President's draft budget. If the President's budget had regularly been accepted as drafted over the last few years, NIH funding would be substantially lower than it is today. In contrast NIH funding grew in real terms by 28 per cent between 1982 and 1987 (though this should be offset against a fall of 14 per cent in the years 1979–82).

11. There is of course no equivalent procedure in the British system for Parliament regularly and significantly to increase estimates under specific headings. At present the American appropriation system benefits medical research: politically, however, medical research in the United States is potentially as vulnerable as research in the United Kingdom.

12. The funding for public health research in the United States demonstrates this latter point. Public health research—which includes health promotion research, medical technology assessment and operational research—has powerful enemies, and has been progressively less well-funded in recent years. Biomedical research—which includes basic scientific and clinical research—has a high political profile, is popular in Congress, and is well funded. It is however important to note that several of the National Institutes of Health (notably the National Heart

Lung and Blood Institute) have supported major epidemiological studies and public health research projects with a view particularly to improving prevention of disease.

Charitable Funding

13. In spite of the preponderant role played by the NIH in medical research in the United States, private foundations are undoubtedly important (as are disease-related charities—particularly those concerned with cancer and heart disease). It is notable that there remains a very strong tradition of large-scale benefaction in the United States. Throughout the country there are research facilities funded by private donations and bequests. Such funding is likely to be of relatively greater importance to secondary institutions than it is to the premier centres visited by the Committee. This tradition of charitable funding seems rooted in something deeper than the United States' long-established system of comprehensive tax relief for charitable donations—indeed, these advantages have recently been reduced as a consequence of the Reagan tax reforms.

14. Benefactors often lay down priorities for the research to be undertaken by their foundations. Indeed, benefactions are frequently made in the lifetime of the donor, and he or she—and thereafter any heirs—may keep close ties with the foundation. The legal status of the funds of foundations is however based in a doctrine that they are public monies administered privately. They are therefore subject to a number of rules—notably that they must spend a certain proportion of their capital endowment (normally 5%) annually—and are subject to Internal Revenue Service scrutiny.

15. At present private foundations fund perhaps $1 billion a year of medical research. The largest of these foundations is the Howard Hughes Medical Institute (HHMI), which for historical reasons operates principally as an independent research organisation, employing staff direct in its own facilities—which are however normally located in universities—rather than as a grant-giving body. The HHMI, which is just emerging from a period of administrative uncertainty because of negotiations over its past value and tax liability, will in the future be disposing of an income of approximately $200 million a year.

16. The Institute's traditional focus has been on biomedical research. This is in its original charter from Howard Hughes. It chose to use its massive recent increase in its resources initially to fund a large building programme in a number of centres. The Committee saw one of these, a molecular biology facility at Stanford. The running of such centres will absorb a considerable proportion of HHMI funds, according to a deliberate policy of creating an elite body of about 180 research scientists (with full technical support) in the various centres. In this sense HHMI objectives are parallel to NIH policy, and one of the concerns of the HHMI is that it should not provide an excuse for the federal government to reduce funds to NIH.

17. The HHMI, in common with other foundations in the United States, is conscious that it can provide flexible support, particularly for young researchers or new research fields or projects. The President of HHMI expressed real concern about the training of young clinical researchers in the United States. The Institute has therefore set up a programme to fund young clinical researchers at NIH, and is providing the capital to renovate facilities for the students on the NIH campus (which is close to the HHMI headquarters). Even more radically, the HHMI is investigating means of supporting undergraduate institutions, as a means of encouraging young clinicians towards research early in their careers.

18. Other foundations whose work was discussed by the Committee—notably the Robert Wood Johnson Foundation and the Kaiser Family Foundation—have become involved in different aspects of public health research, on the grounds that NIH funding of biomedical research was already generous.

Biomedical Research

19. The point was frequently made that the distinction between basic and clinical research is now largely unreal. Molecular biology allows clinicians to look to basic biological mechanisms in attempting to explain disease and develop treatment. Great stress is laid on such research. The prestige that it enjoys explains the political support for massive funding, in spite of the lack of obvious success in the 'war on cancer', or the lack of obvious correlation between spending levels and overall increases in health status of the American population. To suggestions that these techniques had not yet led to substantial notable improvements in treatment the reply was, almost without exception, that it was early days yet and developments such as the understanding

of genetic expression in sickle-cell anaemia pointed the way to how such improvements would come about.

20. The great expansion in NIH was preceded by the Johnson and Nixon initiatives on heart disease and cancer, where the federal government sought, by making large funds available, to beat the major causes of disease in the population. This has frequently been quoted to the Committee as the classic example of throwing research money at a problem for little benefit. The real waste of money was however in attempting to implement large-scale care systems without a sufficient foundation of basic research underpinning programmes. Thus, insofar as these initiatives led to spending on research, and while it is admitted that the large programmes started in the Johnson and Nixon eras were wasteful, now, fifteen to twenty years later, important fields of research are beginning to bear fruit which would not have been opened up without those initiatives. Making money available has provided the best equipment, attracted the best researchers and has, in the long term, stimulated first-class science.

21. The price of the large budgets produced by political interest in the United States has however been some broad political influence on research priorities. There was some suggestion that this is increasing and tending towards political interference in individual projects, in spite of the fact that researchers themselves strongly assert that there is no question of directed research. The NIH have, over the last few years of expansion, placed ‘explicit primary emphasis on the investigator-initiated project’. But, as an example of politically-influenced priority-setting, the National Heart, Lung and Blood Institute (the second-largest of the constituent parts of NIH) is by law required to spend at least 15 per cent of its budget on lung research, and 15 per cent on blood. Research centres have also grown up on sites determined by political, rather than medical or academic, considerations: for example Drew in Los Angeles, or the major institutions in Houston, Texas.

22. The very structure of the NIH, whose constituent institutes are each essentially disease- or condition-oriented, reflects its growth through specific public and political campaigns aimed at particular health problems. Thus, though the separate Institutes act independently as the major grant-giving institutions for academic research, their remits do not correspond to academic medical disciplines. This in turn may create difficulties for the researcher whose project is not central to the concerns of a particular Institute. This is not a severe problem in the United States at present: the relative generosity of funding makes it possible for Institutes to be generous in defining areas to fund good research; and good researchers can structure projects to fit them into the programmes of particular Institutes, without affecting the projects’ aims.

23. Nevertheless, in spite of the large increase in funding of medical research, many researchers in the United States spoke of increasing competition for funding, increasing numbers of first-class projects which were not funded, and an increasing burden on researchers to spend more time on grant applications. The American system of assessing applications is not the same as the British, in that it assumes a high level of ‘approved but not funded’ projects. The Director of NIH however suggested that if NIH did not fund 45 per cent of ‘approved’ applications, then a significant proportion of really good science was not being funded. At present 37 per cent of ‘approved’ applications are being funded.

24. Competition for funding encourages the natural development of centres of excellence. At least two of the institutions visited—Stanford and Johns Hopkins—qualified their comments on the increasing competition for funding by the fact that their share of total NIH funding was higher than ever before. Increased competition for funding is felt most seriously in less prestigious institutions. Drew felt the need to make a special case for funding, in spite of the dangers of such a course in devaluing research in academic eyes (other funding bodies or journals based on peer review, for instance, may distrust a project funded as a result of social considerations).

25. In spite of the massive preponderance of federal funding, academic research in America is largely entrepreneurial, in the sense that the principal investigator—the head of a department or research team—is responsible for his own funding by generating successful research and successful grant applications. This ensures that priorities for research in the United States are, within the substantial political pressures and encouragements related to the funding of NIH

itself, largely determined by the researchers themselves, by peer review of NIH grant applications, as is the case with MRC funding in the United Kingdom.

Research Manpower

26. The principal concern of both federal agencies and individual universities is to foster and keep research leaders. Such scientists spend much of their time on administration, but in the process they protect the research time of their young researchers who are, in theory, both producing first-class research and being trained to be research leaders in their turn.

27. There is however a developing shortage of clinicians undertaking research in the United States. The shortage of them is ascribed to the increasing cost of medical training. A system of loans exists to help students through medical schools, but these loans are no longer subsidised, and so it is not infrequent for students to graduate with debts of the order of $100,000—and $50,000 is the norm—at commercial rates. In these circumstances, and granted the affluence of practising clinicians in comparison with research clinicians, the pressures to go into practice are strong. These pressures are reinforced by the fact that there has been a diminishing number of vacancies in medical schools since the mid-1980s, following the expansion of the 1960s and 1970s.

28. There is a compensating increase in the proportion of medical research undertaken by PhD scientists in the United States. This is not seen as a problem in itself, so long as there are enough clinicians.

29. The NIH place a high priority on the training of researchers. They give generous training fellowships and support for MD/PhD programmes in order to encourage researchers with clinical qualifications, as well as collaborating with the HHMI in the scheme already described.

30. The situation may right itself naturally in the future. First, there is a surplus of doctors. In the long term this may make academic medicine relatively more attractive. Secondly, there is a strong link between the excellence of research and the excellence of treatment in a particular centre, which means that there will always be strong professional inducements for the best doctors to be involved in research in recognised centres of excellence.

31. The latter connection was particularly stressed at Johns Hopkins, which has a unique record of encouraging medical students to be motivated towards research, even at undergraduate level. Yet this in turn generates a different problem: there is a constant pressure on clinicians who have produced important research to treat patients, which again means that they have less time to teach or research. Johns Hopkins has therefore set up a clinician/scientist programme, in which university funds are used in effect to buy half the time of important clinician researchers. This enables the hospital to employ more clinicians than would otherwise be possible. The same problem was identified by other research centres who have evolved similar ways of dealing with it.

Costs of Research

32. One major difference between the United States and the United Kingdom in public support of research in universities is the inclusion of overhead costs in NIH grants. Such costs are not included as a separate item in MRC grants in the United Kingdom, since the overall UGC allocation to the university is intended to cover the well-found laboratory. In America, though many universities are private, they still receive the major part of their research and training funding from the public source of NIH.

33. Universities and medical schools in receipt of research funding from NIH individually agree an overall figure for overheads with the DHHS. This figure is expressed as a percentage of the total cost of the research project, and is added onto the project funding granted, in order to make up the total grant from NIH. The overhead percentages agreed vary widely between institutions.

34. Different institutions also have different systems for using the overhead grant: some leave most of it to the discretion of the principal investigator (who can, for example, choose to take part of his own salary from that source, thus relieving the university). Other universities administer almost all the overhead centrally. The DHHS audits the university for overhead

costs. The percentage figure agreed may moreover be adjusted in subsequent years to compensate for any over- or underestimate on the part of the university in any particular year.

35. There are various different means of meeting the costs of research hospitals. Such hospitals are very expensive to run. Harvard Medical School put this forcefully: the reason Harvard is so rich is that it has never owned a hospital, but has always operated in independent hospitals within Boston and Cambridge—notably the Massachusetts General. UCSF, while running their own clinical units, also have an arrangement with the San Francisco General Hospital and with a Veterans' Administration hospital in San Francisco. Johns Hopkins' solution has been to establish their own Health Maintenance Organisation, in which three community hospitals in effect act as a referral base for Johns Hopkins, which has become purely the tertiary hospital for the HMO. (In this context the National Health Service is admired since it potentially provides the ideal base for integrated clinical research. Medicare now provides a special payment to cover additional costs relating to patients in teaching or research hospitals: this payment is sufficiently generous more than to meet those costs, in most cases, thus relieving other supporters of clinical research, such as NIH and even pharmaceutical companies.)

Universities and Industry

36. It is hard to gauge whether American universities draw a greater proportion of their medical research funds from industry than do British universities. The generosity of NIH funding makes it unlikely. Universities stress the need to protect academic independence and integrity, which are key elements in maintaining the excellence which attracts industrial research in the first place. Universities therefore lay down strict guidelines for the involvement of faculty members with industrial companies. The pattern of such involvement, particularly in the case of the biotechnology industry, is however increasingly complex, with academics owning stock in companies or acting as consultants up to specified maxima of days a year.

37. It is notable that all the organisations visited—whether governmental, academic, commercial or industrial—stressed the importance on the one hand of publication and on the other of filing for patenting. All encourage their researchers to publish fully, and many require them to do so. The Rand Corporation, for instance, will not undertake any research project which does not allow them to publish freely. The furthest that any organisation will go in restricting the right to publish is to delay publication until after patent applications have been filed. The importance of this is that only patented discoveries give industry a real profit motive for developing them.

38. The openness of publication is seen as a guarantee of first-class research methods. The Committee did hear of some research contracts which involved publication restrictions, and in some cases these contracts had been declined by researchers. The motives for attempting such restrictions, particularly when research concerns health technology assessment, are obvious enough. Equally, however, it is perceived as desirable that arrangements between university faculty members and industrial companies should be open: this helps guarantee the university's academic independence.

American Perception of British Biomedical Research

39. The United States and the United Kingdom have traditionally had close links in the field of biomedical research. One of the Committee's hosts went so far as to say that the history of biomedical research used to be the history of British biomedical research—but not any more. Many of those the Committee met expressed real alarm at the conditions under which their British colleagues found themselves. In general a significant diminution in the amount of first-class work coming out of the United Kingdom is perceived. Personal contacts are revealing low morale. Quoted was one trans-Atlantic telephone conversation—made the morning of the Committee's visit—in which an eminent British clinician had said explicitly that conditions for his research in the United Kingdom were now so bad that he was recruitable.

40. The Committee took the opportunity of meeting expatriate researchers, of all ages, at NIH. Their response was the same. They were realistic about prospects and conditions in the United States, and yet almost without exception they could not foresee returning to the United Kingdom.

41. Their criticism of conditions in the United Kingdom falls under three heads. First, pay and conditions are low for medical researchers who have by definition invested a great deal of time in training. Secondly, the status of academic researchers in society is perceived as being

low, especially as compared to the United States—not only are medical researchers not paid much in the United Kingdom, but they are not respected much either. Thirdly, the continued erosion of the research base means that it is hard for researchers to pursue their work even adequately: not only are research grants fiercely contested—they are in the United States—but British laboratories are becoming progressively less well-found with each passing year. It is the combination of all these factors which is felt to be so damaging.

42. In one sense it does not matter where in the world biomedical research is carried out. The field is very international. The United Kingdom is uniquely well-placed, because English is the language of science, to benefit from research in other countries. Yet it was repeatedly pointed out to the Committee that in order to keep abreast with research, and in order to implement new procedures effectively, research capabilities have to be maintained, both within individual centres of excellence, and even more within a country. Otherwise the science in that centre or country will become marginalised, and by not actively contributing to international debate, scientists will lose their ability to participate in and benefit from it.

American Perception of British Pharmaceutical Research

43. A somewhat similar point was made to the Committee about the British pharmaceutical industry. An important part of the British pharmaceutical industry is made up of United Kingdom subsidiaries of American-based (and other) multinational companies. The United Kingdom has historically been an important research centre for multinational companies, since the combination of a strong research base and a strong home market has made drug development in the United Kingdom very attractive. The United Kingdom industry is perceived as still performing remarkably well, in terms of producing good new wide-selling drugs first. The secret of this is again scientific leadership: having a system which produces individuals capable of leading innovative research efforts. The United Kingdom is traditionally good at that.

44. The twin roles of the pharmaceutical industry and government must however be maintained. Both contribute to making one country more attractive than another for a multinational corporation establishing a research operation. Leading pharmaceutical companies often devote well over 10 per cent of turnover to research. It is their major risk. Basic research plays a large part in it: companies have to invest in serendipity to a certain extent. But companies cannot be expected to fund national research bases directly. That is the role of government; and companies pay for it through taxes. It is in the interest of governments to encourage a successful pharmaceutical industry. The United Kingdom has done this in the past.

45. As the pharmaceutical industry see it, there are problems now, however. These are the result of Government action to restrict pharmaceutical costs in the National Health Service combined with the erosion of the research base. Limited effective patent life is also a significant difficulty, as is the increasing cost of and delays in clinical trials and approval. In essence, a major British research and exporting industry is perceived as being seriously damaged by administrative shortsightedness.

Public Health Research in the United States

46. There is a marked contrast between the strength of biomedical research in the United States and the weakness of public health research. Here the British approach to national health services is much admired. The Black Report on ''Inequalities in Health'' was frequently quoted as a model for enquiries into the totality of factors influencing health. In America there is a real gulf between biomedical research and public health research. UCLA is almost unique in having a School of Public Health in the same complex as the School of Medicine, with faculty members who hold appointments in both schools.

47. Public health research, which of its nature proposes an alternative approach to priorities of research, based on health needs, is in some ways in conflict with the entrepreneurial basis of American biomedical research. Moreover, since such research is allied to operational research, which is concerned with evaluating the effectiveness of new or existing treatments or technology, it often arouses resentment among the medical profession who may have a vested interest in those treatments or techniques. Public health research moreover often promotes prevention against cure. In the American medical system, which is driven by fee-based cure, this is a fundamental structural conflict.

48. These problems were recited frequently both by biomedical researchers and by public health researchers. They explain the sporadic development of public health research in the

United States, which has a history of false starts and persistent underfunding. Partly to ameliorate this situation the Robert Wood Johnson Foundation has developed a large programme of public health research including a major commitment to the training of researchers in this field.

Operational Research

49. Various public health and operational research institutions were set up within the DHHS in the 1960s and 1970s: the National Center for Health Statistics (NCHS), the National Center for Health Services Research (NCHSR), and the National Center for Health Care Technology (NCHCT). The first, which is empowered to collect and analyse a unique range of data on the health status of the whole nation, has been the most successful, in spite of being persistently underfunded. Indeed the Robert Wood Johnson Foundation perceives it as being so seriously underfunded that the Foundation is proposing to place research contracts with it. Nevertheless, NCHS provides a more comprehensive range of statistics than is available in the United Kingdom, including estimates of how far health goals set by the DHHS are being met.

50. The setting of such goals is in contrast to much of what the Committee heard in relation to biomedical research. For, whereas many in the United States stressed the absence of any science policy, the Administration does set health goals—for instance, relating to drug abuse or high blood pressure—which are not only pursued but also monitored annually by NCHS. In this way much of the basic structure for a research programme relating the development of health programmes and services to specific goals is already in place.

51. NCHS has been notably successful in comparison with NCHSR and NCHCT. NCHSR was set up in 1968 to study the organisation, financing and outcomes of health services (in the Committee's terms, operational research). Its funding has however declined from $80 million in 1968 to under $20 million now. NCHCT was established in 1978 in order to examine new and existing health technologies in terms of effectiveness, cost, and social and ethical issues. It had no real regulatory functions, but it had wide powers to publish and advise. Unfortunately this made it powerful enemies: in particular the American Medical Association and the Health Industry Manufacturers Association formed a powerful lobby, first to keep NCHCT short of funds (from 1978-81 it received only $7.8 million of an expected $78 million) and then to kill it altogether in 1982, on the grounds that it inhibited innovation and restricted industry.

52. All this has taken place against a background of widely increasing concern—not least within the Administration—about sharply rising health costs. It is odd that very limited programmes originally set up to assess effectiveness are cut, whilst the major programmes, both of biomedical research and of health services provision, roll on virtually unmonitored, together spending up to $500 billion a year.

53. One of the major causes of the failure of agencies within the DHHS is apparently in-fighting within the Department, and a failure to mobilise any effective political support for the agencies in Congress. This is to be compared with NIH's effectiveness in gaining support.

54. There are however signs that the pressing political and economic need to tackle health care costs will provide some incentive to undertake studies with a real chance of affecting policy. The Health Care Financing Administrative (HCFA), which was first set up in the late 1970s to oversee the Medicare and Medicaid programmes, has a real interest in this area. Though the new prospective payment system for Medicare was implemented by the Administration in 1983 with very little prior research into its likely effect, Congress has now established a Commission to assess it. HCFA has made a start in limiting the treatments it will pay for under Medicare—notably by setting criteria for who should receive heart transplants and where the transplants should be done. It is likely that the major health insurance companies—among which Blue Cross Blue Shield is dominant—are following suit in an attempt to limit their liability, as are the health insurance schemes funded for their employees and pensioners by large companies.

Health Promotion

55. One major area where the United States has made significant advances in health status is in heart disease, where mortality rates have been consistently reduced, by a combination of reduced smoking—through public education—and vastly improved management of high blood pressure. A significant factor in this has been programmes funded by the National Heart, Lung

and Blood Institute: it is the notable field where NIH's biomedical work has led through into public health research.

56. The policy implications of these successes are very complex. Even though a large part of the American population is health-conscious, there is little political impetus towards large-scale spending on health promotion. On the face of it this is curious, since prevention is cheaper and pleasanter than illness and cure. Granted however that half the medical expenses incurred in any individual's life tend to be in the last six months of life, the social benefits of health promotion cannot be offset directly against reduced medical expenditure, since it is likely that in the foreseeable future the practical effect of health promotion will be little more than the postponement of curative medical treatment, although the quality of life might be improved. Thus, in spite of the success of the United States in controlling heart disease by changes in life-style, coronary by-pass surgery is far more prevalent (and indeed popular) in the United States than in Europe—even though the benefit of much by-pass surgery is considered by some to be dubious. The drive for it comes perhaps from the fee-for-service health system.

57. Major scope is perceived for health education and health promotion among minorities. The Kaiser Family Foundation has set up a new health promotion scheme by which the Foundation combines with local community groups to establish health promotion centres. The Foundation provides progressively diminishing counterpart funding over ten years, at the end of which the local community will take on the full cost. The scheme also includes research into the intractable problems of health promotion: for instance, how social resistance to changes in lifestyles can be overcome. Moreover, a significant proportion of the funding is used to monitor the effectiveness of the programme in terms of health outcomes.

58. In Los Angeles the Committee visited the Rand Corporation, whose health programme department has 150 researchers in different disciplines—economists, statisticians, behavioural scientists. Rand complained of the same lack of interest in public health research that other academic researchers complained of. A significant amount of the work Rand does in the field is the result of their identifying a problem and then finding a client for the research, rather than through clients coming to them.

Problem-led Research

59. An alternative model for health research is presented by the Drew Medical University in the Watts area of Los Angeles. After the Watts riots of the late 1960s the county had established a hospital, the Martin Luther King Medical Centre, to improve health services. Thereafter it became clear that a concentration on care was insufficient without a training and education programme to ensure a supply of clinicians prepared to work in the community; and that it is not possible to undertake good undergraduate training without research capability. Drew was therefore established in its present form. It is now developing a range of research projects specifically connected with local problems. They have identified priority areas for research instead of relying purely on investigator initiation and peer review, since they regard the latter as a luxury they cannot afford. The work at Drew has its critics. It is too early to see whether the approach will yield good research. The response rates for local involvement in research projects are adequate, and suggest that the centre is indeed having some success in tapping community resources.

Nursing Research

60. Another somewhat controversial area the Committee discussed was that of nursing research. This started in the 1960s. Nursing was defined to the Committee as the care of the sick who, whether through lack of education, physical disability or any other cause, cannot take care of themselves. This care includes the attempt to remedy that need for care as well as meeting it.

61. Nursing research is perceived as essentially clinical. In fact, much of the impetus for it comes from the same motives as underlie operational research. There are nearly 2 million nurses in the United States, 70% of whom are working at any one time. They provide a very significant amount of total health care, and yet little is known about how many nursing techniques affect health: for example, how patients present themselves as ill, what they attribute their illnesses to, what forms of contact are valuable in treatment and what cultural differences affect these.

62. Nursing research suffers from the same perceived shortcomings as much public health research: that is, it is "soft science". Nevertheless, a significant step forward has been made in the United States with the establishment, at NIH, of a National Center for Nursing Research.

This is in many ways a natural outcome of the professionalisation of nursing which has been taking place in the United States, as it has in the United Kingdom. It is also however the fruit of political lobbying. Again, it is too early to say whether the establishment of the National Center will have the desired effect. Its funding next year is estimated at £25 million: much will depend on the ability of its supporters to expand this.

INSTITUTE OF MEDICINE

63. Perhaps the clearest response to the need for public health research is being made by the Institute of Medicine. The Institute was originally set up in 1970 by the National Academy of Sciences to examine health policy and advise government. The Academy itself is a nineteenth century institution in many ways modelled on the Royal Society, with a responsibility for advising the government on science policy and carrying out research, either as commissioned by the government or on its own initiative. The Institute is therefore not a government agency, but it is uniquely placed to influence policy. It has to raise its own funds, and has a relatively small permanent staff of just under 100. The membership of the Institute is limited to 500, and is by election. Members are obliged to contribute to the work of the Institute and are not paid for doing so. About 25 per cent of the members are drawn from professions outside medicine.

64. The Institute has identified many of the problems which have policy implications for American health services, and has undertaken a wide range of studies to fill the gaps. Substantial studies have for instance been published on the problems of ageing, mental health, and on medical training and societal needs.

AIDS

65. The Committee took the opportunity, while in America, to focus on AIDS research, as an example of a specific health problem which could be tackled by research.

66. Recently the Institute of Medicine set up a Committee on a National Strategy on AIDS. This was in part a response to a perceived lack of action on the part of the Presidential Commission on AIDS. That Committee subsequently produced a report which was further used by the Institute as the basis of a book designed to inform the public about the issue.

67. In Harvard, at the last meeting of their visit, the Committee met Dr David Baltimore, Co-chair of the Institute of Medicine Committee and Director of the new Whitehead Institute for Biomedical Research. Dr Baltimore trenchantly presented the strengths and problems of American medical research. His Institute, which is a new institution set up through a private endowment, is intended to give a small group of young first-class researchers facilities which are as free as possible from the need to grind through the academic system. It is already producing remarkable results. It is doing so on the basis that it will earn 75 per cent of its funding through NIH grants.

68. Dr Baltimore refused to be drawn—both in relation to his own work and to the work of his Institute—on the connection between pure research, conducted for its own sake (which is what he insisted he was doing) and medical treatment. Nevertheless, his work on retroviruses, for which he won the Nobel Prize in 1975, has proved of direct relevance to AIDS. He regarded this as the major biomedical research challenge facing the country. He deplored the lack of leadership in research which he believed was being shown by the Administration. There was no shortage of money—perhaps $1 billion would be spent in 1987 on AIDS research in the United States. There was however a lack of direction. As he put it, if the United States had tried to develop the atom bomb in this way, they would never have succeeded. He had therefore become involved in strenuous political activity to lobby for the political leadership needed.

69. Far from deploring directed research in that regard, he was blunt: molecular biology should in theory be able to establish every aspect of the working of the HIV virus. (It is a relatively simple organism, with ten gene loci.) He advocated the specific appropriation of significant parts of the aggregate federal funding on AIDS to research teams charged with specific tasks—for example, the examination of one specific gene locus—and central coordination to ensure that other teams studied different gene loci and not the same one. The war on AIDS was different from the war on cancer: there were real scientific leads to follow with AIDS, and the task was to ensure they were followed as swiftly as possible.

70. At UCLA the Committee met Dr Roger Detels, the principal investigator of the Los Angeles Center of the multi-centre AIDS Cohort Study which is the major epidemiological study

of AIDS in the United States. AIDS was in fact first identified in Los Angeles, although San Francisco has won a reputation as the leading centre for the study of AIDS, because of the city's response to the problems of care (in which the gay community has played a major voluntary role).

71. Dr Detels reported that sero-conversion—that is, evidence of infection—in the gay community in both San Francisco and Los Angeles has declined rapidly to 1-2 per cent a year. The epidemic in those communities is in short virtually contained, at any rate at present. Infection among intravenous drug-users is now the more serious problem in those areas, especially since these people are notoriously hard to reach, and pose a real threat of spreading infection through prostitution (p 95).

72. Admiration was expressed on a number of occasions for the British public health campaign relating to AIDS—nothing on a similar scale has been attempted in the United States—and the Committee noted that the shift in emphasis from the gay community to intravenous drug-users has been reflected in that campaign.

73. The Committee noted also the conflict between the estimates given to them of how many of those infected with HIV virus would develop the disease. A number of researchers put the eventual figure at 100%. Dr Detels disputed this, on the grounds that it was based on inadequate epidemiological evidence. He put the figure far lower. The best available epidemiological evidence suggested that resources should be directed into searching for the co-determinants of HIV infection in the development of full-blown AIDS or ARC (AIDS-related complex) since HIV infection alone did not appear to be a sufficient condition to explain development of the disease.

74. Most major American pharmaceutical companies are making efforts to produce drugs or vaccines which will be effective against AIDS, even though the widely-canvassed problems of testing are formidable. Again, however, such problems have been overcome in the past, notably in the case of polio vaccine.

75. In sum, there is no shortage of will or resources to pursue AIDS research, in all its aspects, in the United States. The United Kingdom's efforts against this background are small, but significant: the one major drug to have emerged so far, zidovudine (formerly known as AZT), was after all developed by Burroughs Wellcome, the American subsidiary of the British-based Wellcome plc.

76. In America AIDS is however an example of a wider problem. Public concern has ensured that massive resources are now available for research, both biomedical and public health, in connection with AIDS. In some cities, notably San Francisco, there has been a close link between basic, clinical, behavioural, social, epidemiological and health services research and public policy. In particular, public policymakers have demanded and been swift to respond to research. This is to a great extent a special case, however. As such it is the exception which proves the rule: if the health services are not able to make a coherent and effective response to AIDS over the years to come it will be because the linkages between research and service are inadequate. Problems in the United Kingdom may be not dissimilar.

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